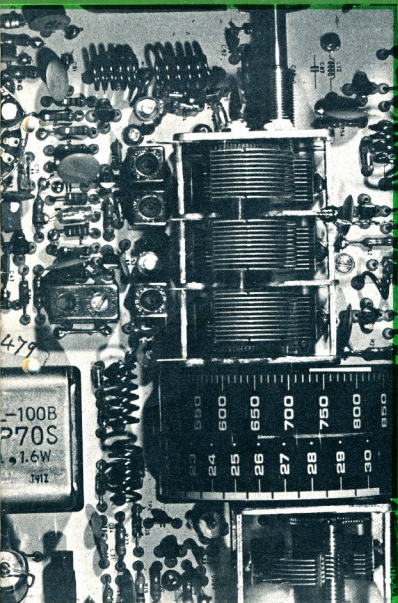


amateur radio

JUNE, 1974



- REPORT ON 1974
FEDERAL CONFERENCE

- VK6IZ DOUBLE
INVERTED VEE

- AUDIO DERIVED
AGC FOR SSB
RECEIVERS

- FURTHER IDEAS
ON THE G5RV

- DESIGN OF
NORMAL-MODE
HELIX ANTENNAE

- VK-ZL-OCEANIA
1973 CONTEST
RESULTS

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

GRID DIP METER SPECIFICATION



Model TE-15
Freq. Range: 440kHz-280MHz
in 6 Coils
A Coil 0.44—1.3MHz
B Coil 1.3—4.3MHz
C Coil 4.14MHz
D Coil 14.40MHz
E Coil 120-280MHz
Transistor: 3 TR's & 1 Diode
Meter: 500uA F.s.
Battery: 9V (9L-006P)
Dimensions: 180x80x40mm
Weight: 730g

Price \$36.50
P & P \$1.00

DELUXE AUDIO GENERATOR SPECIFICATION



Model HE-22D
Mod-I TE-22D
Freq. Range: Sin: 20Hz-200kHz
Square: 20Hz-25kHz
Output Voltage: Sine: 7 volt
Square: 7 volt
Output Impedance: 1000 ohm
Freq. Accuracy: +3% & 2Hz
Distortion: Less than 2%
Tube Complement: 6BM8
12 AT7, 6Z4
Power Source: 105-125, 220-
240V AC, 50/60 cps, 15W
With Attenuation Range
4 Ranges—1/1, 1/10, 1/100,
1/1K

Price \$49.50
P & P \$2.00

Compact-Space Saving,
Printed Circuit for uniform
Characteristics.
Low Distortion
Dimensions: 140 x 215 x 170mm
Weight: 2.8kg.

DX150B REALISTIC WITH SEPARATE SPEAKER



The popular REALISTIC DX150B which has gone from strength to strength with amateurs, short-wave and broadcast listeners alike, now has a further improvement. A SEPARATE MATCHING SPEAKER included.

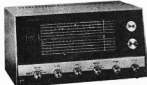
The DX150B gives long-range, world-wide realistic reception on 4 bands, including Broadcast Fully transistorised—all solid state—no warm-up delays, the DX150B will run on dry cells if current fails or is not available, will operate from a car's cigarette lighter or any 12V DC service. A 240V AC power supply is also built in. Over 30 semi-conductors—product-detector for SSB/CW, plus fast and slow AVC—variable pitch BFO—illuminated electrical band-spread, fully calibrated for amateur bands—cascaded RF stage—ANL for RF and AF—zener stabilised-OTL audio—illuminated "S" meter.

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P & P \$2.00

new price — \$189.00

LAFAYETTE HA-600A SOLID STATE GENERAL COVERAGE

- 5 BANDS 150-400 kHz, 550-1600 kHz (Broadcast band), 1.6-4.8 MHz, 4.8-14.6 MHz, 10.5-30 MHz.
Operates from 12 Volts DC (negative ground) or 220-240 Volts 50 Hz.
- Field Effect Transistors in RF Mixer and Oscillator Stages.
 - Two Mechanical Filters for exceptional selectivity.
 - Voltage Regulated with Zener Diodes.
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 - Speaker Impedance: 4 to 16 ohms.



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Also available — HA800B Amateur Band, 6 Bands
3.5MHz to 29.7MHz and 50-54MHz as above
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Xtal Extra \$10.75. P & P \$2.00

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This is an all solid state, wide-band RF Signal Generator which produces low impedance low distortion RF signals. It is highly dependable and easy to operate, and is a handy working instrument for service benches and electronic equipment production centres.

- SPECIAL FEATURES**
- Generates wide range signals from 100kHz to 30MHz in six frequency ranges.
 - All solid state construction for instant waveforms, compact and lightweight portability.
 - Includes 400kHz signal source for modulation of output signal, which can be modulated by external sources.

Price \$99.50. p & p \$2.00

P.M.G. TYPE TELEPHONES—DIAL TYPE EXTENSION



Ericson Type manufactured by L. M. Ericson. As used by PMG Dept. As new condition. Dial in base. \$19.50 Tested, plus 75c Black Phone, Chrome Dial Standard type, Robust construction. \$17.95. Few only plus 75c Plastic Type, Standard PMK type. Manufactured by L. M. Ericson. As new tested. All phones fitted with standard phone plug and socket. \$17.50. p & p 75c Double Phone Plug, 6.5mm 75c Standard 2 Circuit Phone Plug PMG Type 30c PMG Type Counters, 4 digit, 48 Volt operation 50c PMG Type Telephone Plug & Socket, round type PMG Type Phone Plug & Socket, standard Ericson Type White Plastic 85c per pair PMG Type Telephone Extension Bells, 48V \$2.00 230 Volt RVB Horn Tested \$7.50

TRIO 3" OSCILLISCOPE DC — 1.5 MHz MODEL CO-1303A



SPECIAL FEATURES

- Vertical sensitivity of 20 mV/cm, three step attenuation, AC DC operation & wideband frequency response from DC to 1.5MHz.
- DC vertical and horizontal amplifiers for wide versatility make possible external sweep speeds of less than 1Hz.
- All solid state construction for compact, lightweight portability.
- Smoked filter glass CRT face and exclusive designed graticule, graduated in dB for clear waveform comparisons.
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\$8
Other larger units from \$15

Coax. Cable, 58 ohm Ascard 15 P1/24. Brand new 1/8" outside diameter. 12c per yard. \$10 per 100 yard reel

C11 Transmitter, AM or CW, made by Plessey (England). Continuous coverage from 2-16 MHz in 4 bands. Complete with 24 Volt power supply, cables, mike, etc. \$65

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Our Disposals Store at 104 HIGHTETT ST., RICHMOND (Phone 42-8136) Is open Mondays to Fridays, 10.30 a.m. to 5.0 p.m., and on Saturdays to midday.

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910



JUNE, 1974
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Category "B"

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FRONT COVER

An Interesting internal view of part of the Barlow Wadley receiver.

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Copy is required by the **third of each month**. Acknowledgment may not be made unless specially requested. All important items should be sent by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying any reason.

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Advertising material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142**, by the **25th of the second month preceding publication**. Phone: 24-8652.

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DIVISIONAL BROADCASTS

Do you have the time and want to keep in touch with events? If so here are the latest details available of Divisional broadcasts.

VK3WI
First broadcast scheduled for Sunday 21st April and thereafter same day and time:
10.00Z 3595 kHz

7146 kHz
146.5 MHz FM
BC Committee VK1VP, IMP, 2YS/1.

VK2AWI
11.00 local time Sundays:
3595 kHz AM
7146 kHz SSB
52.525 MHz FM
53.866 MHz AM
145.13 MHz AM
Hunter Branch Mondays 19.00h 80m.

VK3WI
10.30 local time Sundays:
1825 kHz AM
3600 kHz SSB
7146 kHz SSB
Ch1 FM
(subject to availability at present of relay stations whilst under re-location).

VK4WI
09.00 local time Sundays:
3580 kHz AM
7146 kHz SSB
14342 kHz SSB
re-broadcast on Ch B FM. BC officer VK4HB.

VK5WI
23.30Z Sunday mornings originating on 1.8 MHz band and relays as follows—
3.615 MHz by VK5ZQ
7.125 MHz by VK5NB
14.170 MHz by VK5TY
52.2 MHz by VK5ZEG
Ch 48 by VK5WB
VK8CM in Darwin on 2m
VK5OK in Mt. Gambier on 2m

VK6WI
09.30 local time on Sundays:
3600 kHz SSB
7080 kHz SSB
14100 kHz SSB
52.656 MHz FM

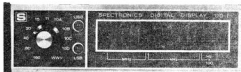
VK7
09.30 local time on Sundays originated on Mt. Barrow 2m repeater VK7RAA and re-broadcast in Launceston area 3672 kHz SSB, 7130 kHz AM and in Hobart area on 53.032 AM, 144.1 MHz AM, 148 MHz FM and 432.1 MHz AM.

SIDE BAND ELECTRONICS ENGINEERING

YAESU MUSEN TRANSCEIVERS

Prices quoted are with by-law import duties exemption. Firm order must be accompanied by minimum 50% deposit, 3 photo-copies of the amateur station license for the by-law application. Average delay in delivery 6 to 8 weeks.

FT 101 B AC/DC 160 to 10 M and fan	\$525
FT DX 401 AC supply built-in	\$495
FT/FP 200, but in very short supply	\$370
FL 2100 linear amplifiers	\$375
YC 355 D frequency counter, up to 200MHz, only	\$250
FT 101/101B/401/560 CW filters	\$30
FT DX 400/560 noise blankers	\$20
For YAESU MUSEN FT-101 and FT-101B, 560 and 401 users, a digital frequency read-out counter, made for the YAESU sets but coming from the U.S.A., plugs straight into the transceivers and reads the operating frequency to 100 Hertz measures 8" wide, 3" high and 7" deep with clear LED digits,	\$160



144-145MHz Two Metre Equipment

CLEGG FM 27-B 25 Watt output 145-147MHz transceivers, independent continuous receiver and transmitter tuning, with by-law import duties exemption only \$350

BELCOM Liner 2 20W SSB PEP 12V DC solid state transceivers \$250

KEN PRODUCTS KP-202 hand-held 2W output FM transceivers \$150
KCP-2 NICAD battery chargers & 10 NICAD batteries \$35

KLM ELECTRONICS solid state 12V DC linear amplifier, 12 Watt output with 1 to 2 Watt drive, ideal for the KEN KP-202, with automatic antenna-change-over when driven \$50

YAGI ANTENNAS 9 element 10 ft. boom, with gamma match coax feed \$30

MIDLAND PRODUCTS

SWR Meters, 52 ohm impedance, twin-meter type \$16
same SWR Meters, single-meter type FSM \$12
PTT hand-held microphones 50K dynamic \$10
5 Watt CB 23 channel 12V DC operation AM solid state transceivers, complete with crystals for all channels, ideal for future novice licensees. PTT microphone included \$95
5 Watt AM 15 Watt PEP SSB CB 23 channel transceivers, same comments \$175

PONY CB TRANSCEIVERS

Model CB-74 5 Watt AM 6 channel capacity 12V DC with microphone \$80
Model CB-78 5 Watt AM 23 channels, with microphone and all crystals, 12V DC \$95

BARLOW-WADLEY RECEIVERS

Model XCR-30 Mark 2 portable crystal controlled communications receivers, cannot get enough of them from South Africa, when available \$225

HY-GAIN ANTENNAS & TRANSCEIVERS

14 AVQ 10 to 40 M Verticals, no guys, 19' tall, needs lots of radials \$45

18 AVT 10 to 80 M verticals, no guys, 23' tall also needs lots of radials \$65

TH 3 JR 10/15/20 M Junior 3 el. Yagi, 12' boom 20 lbs weight \$100

TH 3 Mk 3 10/15/20 M senior 3 el. Yagi, 14' boom 40 lbs weight 1 KW \$145

TH6DXX 10/15/20 M senior 6 el. Yagi 24' boom 60 lbs weight, 1KW \$175

204 BA 20 M mono-band 4 el. full size Yagi 26' boom called the TIGER Array and it is a TIGER! \$150

DB 10-15 10/15 M 3 el. Yagi ideal for use above the 204 BA 25 lbs. \$110

Mobile Whip 108MHz up, with magnetic hold base, 18' RGG-58U, cable and coax plug \$18

Mobile Whip, standard base, 12' coax cable & plug \$9

BN-86 baluns for beam buyers only \$18

Locally made balun \$15

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HAM-M \$130

HY-GAIN model 400 roto-brake, \$190

All with control/indicator units
New surplus 8 core control cable, \$0.25 per yard.

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Omega TE 01 up to 100MHz \$25

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POWER OUTPUT METERS

Galaxy RF-550A with 6 position coax switch \$75

Swan WM-1500 4 metering ranges 5 to 1500 W \$50

POWER SUPPLIES, 240V AC to 12V DC 3 to 3.5 Amp. regulated output overload protected \$26

ELECTRONIC KEYS Katsumi model EK 105 A 230V AC with key paddle \$35

ASAHI AS-303 A set of 5 mobile whips, complete with swivel mount, spring, base section, the lot for \$80

All prices quoted are net, cash with orders, basis Springwood, N.S.W. Sales tax included in all cases, prices subject to changes without prior notice. Sorry, no terms nor credit or COD, only cash and carry. Government orders same conditions!
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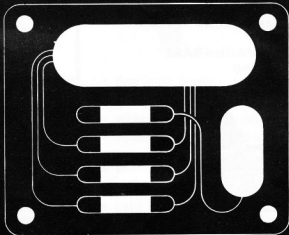
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and lots of
others, too.**



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For more efficient 2-metre performance use the SCALAR M25. A 3dB gain mobile, designed for use in the 140-175 Mhz band. The antenna is a 5/8 wavelength whip complete with integral loading coil. Constructed of fibreglass these antennas combine resilience with non-ferrous continuity for high quality performance and noise free operation.

AND SCALAR'S OWN

"MAGNABASE"

MODEL MGB



This high quality magnetic base may be fitted with any SCALAR whip. Instant installation on any flat metal surface.

Fully protected for scratch free mounting.

Complete with 12 feet of RG58CU coaxial cable.

SCALAR Industries Pty Ltd

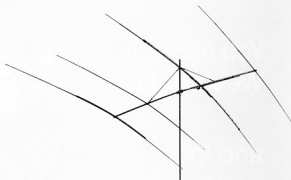
Communication Antennas and
RF Shielding Engineers

VIC: 18 Shelley Ave., Kilsyth, 3137. Ph: 725 9677.
Cables: WELKIN.
NSW: 20 The Strand, Penshurst, 2222. Ph: 570 1392.
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SA: Rogers Electronics. Phone: 264 3296.
QLD: Warburton Franki (Bne.) Pty. Ltd. Ph: 52 7255.

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Model DB-24B for 20 and 40 Meters

- 8.1 db Gain on 20 Meters
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- Takes Maximum Legal Power



Uses three full-sized elements on 20 meters and two 2/3 size elements in conjunction with Hy-Gain's perfected linear loading on 40 meters. Unique linear decoupling stubs make two band operation possible without inductance and capacity traps. Antenna feeds with 52 ohm coax and is equipped with balun and Beta Match for optimum energy transfer. F/B Ratio: 20 meters, 20-30 db; 40 meters, 10-20 db. Boom length 24 ft., longest element 43 ft. Maximum input 1 kw, Am. Shpg. wt. 64 lbs.

AVAILABLE EX STOCK

PRICE: \$210

Plus Freight

BAIL ELECTRONIC SERVICES

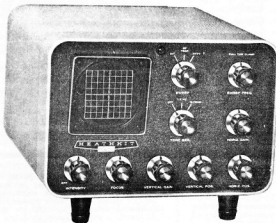
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MONITOR SCOPE MODEL SB-610



- Provides accurate Display or Transmitted AM CW RTTY Signals.
- Shows signal envelope, A.F. and R.F.
- Shows receiver I.F. envelope with IF's up to 6MHz.
- Operates 160-6 Metres. 15W - 1kW.
- Trapezoid patterns.
- Signal Power Limits, 15 Watts for 1 kW.
- Built-in Tone Oscillators.
- 50-75 ohm. Coaxial Input.

\$105.88 incl. Sales Tax

Ex Stock

RF LOAD WATTMETER MODEL HM-2103



- Frequency Range 1.8 to 30 MHz
- Wattmeter Range 0-200 and 0-1000 watts
- Wattmeter Accuracy $\pm 10\%$ of full-scale reading
- Power Rating 175 watts continuous, 1000 watts maximum
- Overload Indication Thermal switch activated
- SWR Less than 1.2:1
- Load Type Noninductive, solid carbon
- Load Impedance 50 ohms nominal
- Connectors UHF type SO-239

5 $\frac{1}{2}$ " wide x 6" high x 13 $\frac{3}{4}$ " deep

\$105.82 incl. Sales Tax

Ex Stock

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188-192 Pacific Highway, St. Leonards, N.S.W., 2065.
Tel.: 43 5305

QSP

Amateur Radio is a hobby. An absorbing hobby. A rather special hobby, in that, to participate, one must qualify before participating.

It follows, then, that we must act responsibly to retain our privileges and we must consider our activities in this context.

Yes, Amateur Radio is political. But only in the sense that the corporate body must negotiate with various authorities, both in this

country and other countries, via our international affiliation with IARU.

Internally we should be concerned with those activities which are aimed at enriching our hobby and by being useful to our community, should the need arise.

We must foster the principles of Interstate and Intra-State co-operation as well as International fellowship.

I would like to conclude with the six precepts of the Amateur Code:

One The Amateur is Gentlemanly . . . He never knowingly uses the air for his

own amusement in such a way as to lessen the pleasure of others. He abides by the pledges given by the WIA in his behalf to the public and Government.

Two The Amateur is Loyal . . . He owes his amateur radio to the WIA and he offers it his unswerving loyalty.

Three The Amateur is Progressive . . . He keeps his station abreast of science. It is built well and efficiently. His operating practice is clean and regular.

Four The Amateur is Friendly . . . Slow and patient sending when requested

friendly advice and counsel to the beginner, kindly assistance and co-operation for the broadcast listener; these are marks of the amateur spirit.

Five The Amateur is Balanced . . . Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community.

Six The Amateur is Patriotic . . . His knowledge and his station are always ready for the service of his country and his community.

J. J. Martin VK3TY
Executive Member

IARC

QST Feb. '74 lists a meeting of the International Amateur Radio Club at ITU HQ in Geneva on July 27th and 28th 1974. If you are likely to be up that way. It will be a technical meeting and for further details contact IARC President, Dr. M. Joachim OK1WI, ITU, Place des Nations, 1211 Geneva 20, Switzerland.

QUERNEY GC8

A note from VK3APN includes times and frequencies for the rest of 1974 when GC8HT will be on sched. for 1 hour at a time relevant to VK operators. For June the dates, times, frequencies and modes are:

10th	0800 Z	7043	CW
	0900 Z	7083	SSB
16th	0900 Z	7083	SSB
17th	0700 Z	14013	CW
	0800 Z	14043	CW
	0900 Z	14113	SSB
23rd	0900 Z	14113	SSB
25th	1400 Z	14173	SSB

When QSLing write the month in words. GC8HT prefers direct QSLs to Box 100, Guernsey, G.C. with SAE plus 1/IRC for surface mail reply or 2 IRCs for air mail reply.

ENERGY CRISIS

"Although large-scale use of wind-driven generators declined in the USA with the introduction of the rural electrification programme in the '30s, there is a revival of interest in alternative energy sources resulting from the threat of the growing energy crisis, several individuals in the US are presently utilising wind-driven generators as their only source of power in the home and are finding it quite adequate". Part of an article in Feb. '74 QST.

Afterthoughts

Fig. 1 on page 14 of April AR. Total length of antenna is 102 ft, not one leg which should be shown as 51 ft.

AMEND YOUR COPY NOW!

In the "Afterthoughts", page 11, May AR, the square root sign on the right hand side of equation 3 should cover 2A only. In equation 5 the square root sign covers the first bracketed section only. The photographs 3 and 4 are back to front and upside down.

DEPARTMENT OF CUSTOMS & EXCISE Quote 72/7884

April 18 1974

Dear Mr Dodd,

I refer to past correspondence concerning by-law admission of transceivers designed exclusively for amateur radio use.

The situation has been under review for some time and it has now been decided that amateur transceivers may be admitted under by-law without the necessity of producing an Amateur Station Licence.

In accordance with this decision, a reference operating on and from 1 April 1974 is currently being inserted in the Consolidated By-law references publication to provide for duty free admission of amateur transceivers up to and including 28.7 MHz.

While this will cover the bulk of imported amateur transceivers, there are units operating on higher frequencies that will, of course, not be covered. The situation in respect of these is still under review.

However, pending completion of this review, consideration will be given to by-law admission of specific models on receipt of formal by-law applications, accompanied by details of the goods concerned and evidence establishing that suitably equivalent goods are not reasonably available from Australian manufacturers.

Yours sincerely,

R. P. Monck

for P. A. MURPHY

Director, By-law Operations

Mr. P. B. Dodd,

Secretary

The Wireless Institute of Australia

PO Box 150

TOORAK Vic. 3142

VHF/UHF ADVISORY COMMITTEE

The Chairman of the WIA VHFAC advises the Committee is about to look into the replies to questionnaires relating to the 6m band. Has anybody anything to submit about this band? If so, it is recommended you write at once to VK3ZPA QTHR, include your ideas on the 2m band too if you want to. Also any uncompleted questionnaires would be welcome properly completed.

IARU

News has come to hand that the Pakistan Amateur Radio Society has applied to IARU H.Q. for membership. The secretary of the society is M. Noor Khan and the address is given as PO Box 65, Lahore, Pakistan.

WARC 1979 — ITU GENEVA

Tom Clarkson, ZL2AZ, writing in his Report to NZART for 1973 as published in Break-In for April 1974 stresses the vital significance to the amateur service of the World Administrative Radio Conference scheduled for 1979. He wrote 'They (FCG/ARRL high-level committee in the USA) are approaching the task of evaluating all aspects of the Amateur Service. The frequency space it needs, or deserves, is being scrutinised in great detail. This includes the justification for having amateur activity'.

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experiments in modulation and audio

part four

J. A. Adcock, VK3ACA
P.O. Box 106, Preston, 3072

Here is the concluding and perhaps most controversial part of the series. If you too would like an analogue compressor, then read on.

PERFECT COMPRESSION (System 5)

As described earlier, equation (6) represents the complete waveform of an SSB signal. This in simplified form is $A \sin(\theta_0 + \theta_1)$ where A , θ_0 and θ_1 are as previously defined. If this signal is heavily RF clipped or RF compressed, the result will be $k \sin(\theta_0 + \theta_1)$, that is, the A or variable amplitude component of the waveform has been removed and replaced by a constant k . When the signal is heterodyned back to audio, the result is simply $\sin \theta_1$ or the original audio with amplitude variations removed.

A similar result can be produced using the analogue computer by dividing the original audio by A in which case we have . . .

$$A \sin \theta_1 = \sin \theta_1 \quad A \text{ is as defined for equation 4.}$$

This process was referred to in system 4. The circuit for carrying out this operation is shown in fig. 11. Note that the waveform produced by this system will not be the same as one which uses audio clipping.

If the audio from this system is fed into the microphone jack of an SSB transceiver, the signal coming out of the aerial terminal will be almost the same as if RF clipping and RF filtering had been used. (9dB advantage has been claimed

for RF clipping in reference 1).

There is one small problem which is easily overcome. With zero signal input ($A = 0$) there is a situation of zero divided by zero at the divider and noise is the result. To overcome this, slightly less than complete compression can be used. This is done by introducing a small offset into the divider. The complete equation will now read, output:—

$$= A \sin \theta$$

$$A + a$$

Where "A" is derived from equation (4) and "a" is a small constant, that is small

is annoying to the listener and should be eliminated if possible.

This system presents a number of interesting possibilities to anyone who wishes to experiment with new ideas. It at least shows there are some new methods of attack on old problems.

The system described presents a new flexibility in generating SSB. For example, by reducing the deviation narrow band, SSB can be produced! In effect, the frequency of the audio produced can be divided by any required factor. For example, by using half deviation, the modulating audio is divided by two and there-

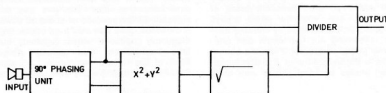


FIG 11 PERFECT COMPRESSOR

as compared with "A" peak.

(This also overcomes the very objectional distortion that complete removal of the amplitude produces.—Technical Editor.)

CONCLUSIONS — SYSTEMS 4 AND 5

Tests so far have produced encouraging results. It was found necessary to provide a simple integrating circuit at the input of the system to produce a 60dB per octave roll off above 300Hz. At the time of writing, the need for this is not understood.

Simultaneous amplitude modulation by the envelope has not so far been tried. The signal which is present between speech

fore the result would be similar to modulation, by half frequency audio, from system 3. Also suitably reduced deviation can be used before feeding the signal into a varactor multiplier. For example by division of the frequency component's by three and heterodyning to 144 MHz an SSB signal is produced that may be successfully tripled in a varactor circuit to 432 MHz. Result is good quality UHF SSB.

The compressor system was undoubtedly the simplest of all to get going and the results are very effective. The actual construction of a unit to perform this function is not a difficult job — don't be frightened by the use of the term computer. The whole unit could be built on a PC board with several trimmers for offset adjustment. Four "four quadrant multipliers" are required for about \$4 each. The rest of the circuit consists of several operational amplifiers and a number of conventional components.

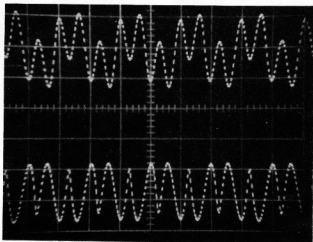
On a predesigned PC board, it should be much simpler than building an extra filter into an SSB rig. If none of the other systems appeal I am sure this one will.

The author would appreciate contacts with anyone interested in developing the subject further. He is active on 1.8, 7 and 144 MHz but can use most modes on all bands up to 144 except 52 MHz. Anyone interested in demonstrations of the system can make a sked by writing or telephone.

The author would like to thank Dan Van Eiken, VK3UI and several others for their assistance in carrying out on-air tests.

References

- 1 OST Jan. 1969
- (Note systems 2, 3, 4 and 5 have been covered by provisional patents.)



PHOTOGRAPH 5. OPERATION OF THE ANALOGUE COMPRESSOR. Horizontal Scale: 1 division = 1 ms. Upper Trace: Two tone audio input. Lower Trace: Compressor output.

Further ideas on the Ubiquitous G5RV

PHIL WILLIAMS, VK5NN
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Rosslyn Park, S.A., 5072.

The article in January 1973 *Amateur Radio* by the originator of this famous antenna was extremely interesting, but there are a few further points which have resulted from re-locating my station from a quiet semi-rural QTH to an urban situation which is much more noisy.

These modifications concern the low impedance feeder from the Z match to the bottom of the 300 ohm feed-line, and a method of feeding and matching the antenna as a top-loaded vertical for 160 metre operation.

The usual form of the G5RV is a 102 ft centre-fed flat-top antenna, which works best when at least 30 ft high. Even the G5R-inverted-V works well on a single central pole. The central feeder is usually a 20 metre half-wave resonant piece of 300 ohm or open wire line which it pays to grid-dip before erection by shorting both ends, stretching out full length and grid-dipping to say 14 150kHz. From the bottom of this to the transmitter or Z match (which should always be used with a multi-band

former at 350 watts and high SWR, and the open wire line is sometimes unsightly in the house.

The twin lead used was twisted polythene coated copper wire from discarded multi-core telephone cable. The wire was designated 20 lbs per mile or about 20 SWG. A balanced quad was also tried connecting diagonally opposite wires together, but little improvement was noticed. About 30 ft of the twisted line showed no sign of distress with 350 watts pep SSB. Black

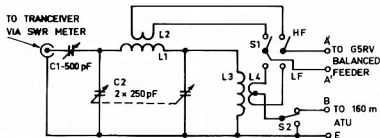


FIG 1 MODIFIED "Z" MATCH - ORIGINAL FROM RADIO COMMUNICATION

HANDBOOK RSGB P13-37 FIG 13-60

airial) it has been usual to employ coaxial cable of 50, 70 or 100 ohms impedance.

This is fine for transmitting but the outside of the coax cable picks up more noise than I wanted to hear, and much of this is transferred capacitively to the Z match tuned circuits from the link. The 80 and 40 metre bands were worst affected in this regard.

Remedies for this were firstly to replace the coax cable with balanced feeder such as lamp flex, Telcon 72 ohm twin-lead, or a low Z balanced quad line, and secondly to earth the centre tap on the low frequency link on the Z match. A third remedy, after the implementation of the former, was the fitting of a cylindrical Faraday shield between the coils. However, this provided only marginal, though measurable, improvement.

In his article in *Amateur Radio* for January, 1973, Page 7, Louis Varney mentions the use of 70 ohm twin lead or the use of 83 ft of 300 ohm line directly to the ATU. However, I had fears about operating the

PVC tubing was pulled over the twisted pair as a weather and ultra-violet light shield where the feeder is in the open.

Noise varies with time and weather but, typically, the above measures reduced S6 or 7 levels to less than S3. The Faraday shield resulted in a further reduction of about 6db or 1S point, but did not make any great difference to readability of signals on 80 metres.

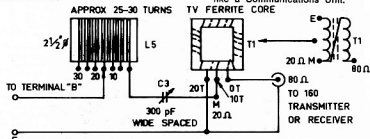


FIG 2 ANTENNA TUNING UNIT FOR 160 METRES

Fig 1 shows the general arrangement of the G5RV and Z-match. The additional switches shown are well worth-while. S1 enables the antenna to be switched to L2 for 10, 15, and 20 metres, or to L4 for 20, 40 and 80 metres, and saves having to jump up to unplug or operate on terminals. The other switch, S2, enables the antenna to be fed against ground for 160 metre operation. A good earthing scheme is needed, such as stakes, radials, etc., but this will not be elaborated on here.

The centre point of the link L4 is a convenient point for feeding, and both 160 metres on a receiver and another band on the transceiver may be monitored at the same time, but it is inadvisable to energise two transmitters into one aerial.

The suggested method of feeding and matching at 160 metres is shown in Fig. 2. Looking into the resonant antenna via L5 and C3 at point M with a noise bridge, for a typical G5RV at about 30 feet height, a radiation resistance of about 20 ohms is measured. The transformer T1 consists of a TV timebase ferrite core (2 sections forming a square loop) with 20 plus 10 turns (bifilar wound) to give a 4 times impedance step-up to 80 ohms, into which the transmitter pi-network loads happily.

Select a tap on L5 which permits C3 to tune 1815 kHz when near maximum capacitance. C3 may be calibrated for 1875kHz for receiving ZL CW stations and up to 2000kHz for other DX as required. This tuning is useful for reducing BC station overloading of the receiver front end and the resulting beats and harmonics. L5 is a coil of about 25 turns 2½ inches diameter tapped every 5 turns or so. C3 is a transmitting type capacitor of about 300 pF, with widespread plates mounted on insulators well clear of the chassis or box and with an insulated drive coupling. I trust these notes may be of value to those 6-bands-on-one-antenna men, whose band-changing must all be done in the shack, and whose homes must not look like a Communications Unit.

Receiver AFC for RTTY

ERIC FERGUSON, VK3KF

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The author describes an electronic method of providing AFC for RTTY signals which has obvious advantages over an earlier mechanical system, but can still be applied to most receivers with a minimum of modification.

We are all aware that occupancy of the amateur bands has increased rapidly over the past decade with resultant increase in QRM. To combat this, RTTY enthusiasts accepted the necessity to reduce bandwidths. The 850Hz frequency shift with relatively broad band channel filters has been discarded in favour of using 170Hz. As a result of this, greater selectivity is required in mark and space channel discrimination.

When 170Hz shift was introduced some years ago, both transmitting and receiving equipment stability was not of the same order as is generally found today, but even so there are still some signals which require that a constant check be made of receiver tuning. In earlier days of the narrow shift, a hand had to be constantly kept free to re-adjust tuning during a QSO. One who suffered this was Jack Kenner VK3PB and it was he who first attacked the problem and evolved a mechanical AFC unit which was **shunted** on to the tuning knob of his then used Galaxy 5. This unit was subsequently described in **Amateur Radio** in the November 1967 issue.

The author, more electronically than mechanically minded, also attacked the problem. After sorting through the junk box, he devised an AFC unit which is still in service, and is likely to be until sufficient time and energy is mustered to complete a solid state version which has been on the drawing board for some time.

PRINCIPLE

The principle of operation of the unit to be described is to use the mark frequency at the receiver output to control the frequency of the receiver HFO in such a way that minor changes in the audio frequency (2125Hz) are translated as a change in potential above or below a reference amplitude applied to a Varicap diode associated with the oscillator.

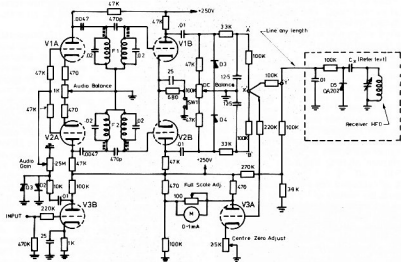
In early experiments it became obvious that changes in audio level due to QSB resulted in changes in the potential applied to the Varicap with resultant **hunting**. This was overcome by the introduction of severe audio limiting. It also became evident that efforts to control over a fairly wide frequency range were not practical be-

cause of the possibility of AFC capture by an adjacent signal. After some usage, satisfactory parameters were resolved and the circuit shown by the accompanying diagram was decided upon. This the **initiated** will immediately recognise as resembling the input and detecting systems of a conventional two-tone terminal unit.

With reference to the circuit diagram, audio at the same level as that fed to the TU is applied to the grid of V3B via a resistive network which limits excessive grid current when relatively high signals are applied. V3B amplifies and limits; further and more severe limiting is applied by the two diodes (D1 and D2) associated with the anode network. As a result, audio fed to the grids of V1A and V2A remains

mination at point X.

To examine operation up to this point, assume a frequency of 2125Hz is applied at the input. It is amplified, limited and again amplified at a constant level. Because the filters are centred 25Hz either side of 2125Hz, the resultant DC from either rectifier will be less than would be the case if the applied frequency corresponded to the filter resonance. Additionally, if the amplification of V1A and V1B equals that of V2A and V2B, and the response curves of the filters are equal, a 2125Hz signal would produce equal positive and negative potentials at point X. In the event of the resistor connecting X and Y being removed this would result in the potential between X and ground being zero.



Notes
V1 & V2 - 12AT7
V3 - 12AX7
D1-4 - 6A630 or any
gen. purpose diode
F1-2 - Refer text

AUTOMATIC FREQUENCY CONTROL FOR RTTY RECEIVERS

constant for any useful level of signal from the receiver.

Associated with the anodes of V1A and V2A are the filters F1 and F2, the resonant frequencies of which are centred on 2100 and 2150Hz respectively. These filters are made as sharply resonant as possible even to the extent of **ringing**. Output from the filters is amplified by V1B and V2B and rectified in opposite polarity by diodes D3 and D4. The resultant DC is distributed in the associated network having a ter-

This is the desirable effect in practice and to achieve this a balancing control is associated with both the audio amplifier and DC network.

Assume now, that the input frequency changes from 2125Hz. If it goes lower, it approaches the resonant peak of F1 so the positive potential at X tends to rise. Because the frequency moves further away from the centre frequency of F2, negative potential at X tends to fall, and point X becomes positive with respect to ground.

Conversely, a rise in the applied frequency causes X to become negative with respect to ground.

CONNECTION TO RECEIVER

Leave this portion of the circuit for the moment and pass to that portion associated with the receiver. It will be seen that a diode is coupled via Cx to the hot end of the receiver HFO tank circuit. It will also be seen that a reverse potential (+4V.) is applied via two 100k resistors in series. This potential was chosen as that which causes the particular diode (OA202) to assume a capacity near the centre of its useful range, which rises or falls with a change of applied potential.

Cx which couples the diode to the tank circuit must be chosen by experiment for a particular receiver, and should be as low in value as will provide adequate frequency control, and at the same time not disturb receiver calibration more than a minor amount. In those receivers doctored by the author, the highest capacity used was 2.2 pF. In some instances sufficient control was obtained by winding two or three turns of solid pvc covered hook-up wire around a lead associated with the hot end of the HFO. Needless to say, the diode and its associated components should be mounted as close as possible to Cx and made quite rigid in mounting. The lead from the .01 capacitor to the AFC unit can be any convenient length and an earth return between the receiver and the AFC unit should also be included.

To assist in the choice of Cx, the following symptoms will be exhibited for incorrect value. (i) Too high value will result in over control of the receiver and will be manifest in the receiver hunting, (an effect brought about by the relatively slow time constant of the RC network associated with the rectifiers). (ii) Too low a value will result in too great a lag in correction of HFO frequency, or no correction at all.

It is conceded not every ham wishes to disturb the innards of his costly transceiver and this was the main reason behind VK3PB's resort to the mechanical and totally external AFC unit. However, many commercially produced ham transceivers have a clarifier facility which controls receiver frequency without disturbing the transmitter. In many cases the clarifier control changes the potential applied to a Varicap diode, in which case a facility is already available which could be controlled by potentials developed by the AFC unit. Perhaps some enterprising ham may care to investigate this.

The only difficulty liable to be encountered in construction of the AFC unit would be the filters F1 and F2. In the author's case the inductors are a nominal 300mH wound on Ferroxcube adjustable pot cores type LA2400. The parallel capacitors are Styroale 0.02 uF of 1% tolerance, and the coupling capacitors 470 pF ceramics. Choice of the Styroale capacitors lies in their temperature co-efficient being opposite to the pot cores, thus resulting in good

frequency stability over a large range in ambient temperatures. The particular pot cores used are probably no longer available, but a substitute may be the Siemens Type 185T2 - N22 having dimensions 22 x 13. Winding details for particular values of inductance are available from the manufacturers.

ADJUSTMENTS

Adjustments to the AFC unit are facilitated by the metering. This is an essential part of the unit as it provides a continuous visual means of monitoring any drift which may occur away from the 2125Hz mark units during reception of the RTTY signal.

Before switching on power to the unit, see that the full scale adj. potentiometer shunting the meter is at its lowest value; this ensures no damage to the meter during preliminary adjustments. Next disconnect the 100k resistor between X and Y, open SW1, remove V3 from socket, switch on power and turn the full scale adj. control to obtain a full scale reading on the meter. Replace V3 and after allowing a warm-up period set the centre zero adj. control to obtain exactly half scale deflection. This reading is the result of the standing +4V bias. Short circuit point X to ground and note the meter returns towards full scale. Remove the short circuit from X, the meter should return to centre.

With the 100k resistor still disconnected again ground point X. Switch off power and adjust the moving arm of the DC balance control to the point where it is resistively centered. Close SW1 and re-apply power. Connect a source of audio to the input. This can be either an audio frequency generator or the receiver itself. The object being to apply a frequency which corresponds to the centre of the mark filter in the TU and which may be varied either side of that frequency. A simple means of doing this is to apply a netting signal to the receiver and adjust tuning to the point where a heterodyne provides the mark frequency. With a low level output from the receiver (the minimum level the TU will operate from), apply a VTM or a high resistance multi-meter between points A (positive) and X (earth), and vary the input frequency to obtain a peak reading on the meter. If the peak appears broad, adjust the Audio Level control until a relatively sharp amplitude peak is obtained as the signal is varied through resonance of the filter. Note the value of the meter reading.

Transfer the meter to point B (neg.) and X (earth) and vary the input frequency above the nominal centre frequency noting any difference in DC amplitude from the previous reading. Any discrepancy should be corrected by means of the Audio Balance control. A minor discrepancy of say 5% can be tolerated. Beyond this, steps must be taken to provide a better balance which can usually be done by applying a capacitor across the cathode circuit of the half of either V1A or V2A which exhibits the lower amplification. An important part

of these adjustments is to allow sufficient time for the DC potentials to stabilise because the time constants of the 12.5 uF capacitors introduce a lag. A final DC balance is obtained by the adjustment of the DC balance control to the point where zero potential exists at point X when the applied frequency corresponds to the centre frequency of the mark filter in the TU.

Replace the 100k resistor between points X and Y, but leave the lead to the varicap in the receiver disconnected. Open-circuit SW1 and check that the meter still reads centre scale, then close SW1 and vary input frequency either side of the mark frequency. At the peak frequencies of F1 and F2 the meter should read zero and full scale. A minor adjustment may be needed to the meter adjusting controls, but the important thing is that when the input frequency corresponds to the centre of the mark filter in the TU, the meter should return to a centre reading.

Connect the lead to the varicap in the receiver and slowly trim the receiver either side of a signal supplying an output frequency corresponding to the centre-mark frequency (2125Hz). Watch the AFC meter move either side of centre, due to variations of the audio output frequency not more than about 5Hz. As the frequency is tuned away from the mark frequency, the meter will reach full scale or zero and then return to centre scale. This indicates that control has been lost.

A condition which may arise when the foregoing tests are being made, particularly if the receiver employs two mixers (double superheterodyne) is exhibited by the receiver refusing to lock in on the mark frequency. This is easily overcome by reversing the grid connections to V1B and V2B.

OPERATION

When tuning to a RTTY signal leave SW1 open and use the normal tuning procedure. When print out is satisfactory, close SW1. If the receiver is exactly tuned the meter will indicate a centre scale reading. If not, trim the receiver until a centre reading is obtained. Thereafter, any drift will be indicated by the meter and from time to time, the receiver may be re-tuned to maintain a centre reading. This trimming will not change the audio output frequency if done slowly. With experience, the meter will indicate if the signal has drifted high or low and thus the appropriate direction for re-tuning.

The long time constant of the DC filtering network provides a sufficiently constant potential to be maintained at point X during normal RTTY transitions between mark and space units. The TC is short enough to allow tracking of a normal slowly drifting signal.

The power supply is not discussed as it may be a conventional supply delivering about 250V HT and 6.3V AC for heaters. Component layout is not important in the AFC unit, nor is shielding as it is not operational during transmission. ●

VK6IZ Double Inverted Vee

more gain for less money

K. KHUEN—KRYK, VK6IZ

Unit 32, Harbour Heights,
East and George Streets,
East Fremantle, 6158

Many amateurs find that twenty metres requires a better antenna than just a dipole and are perplexed as to how to get more signal. Here is a solution that will give good results and cost a minimum to build.

A beam costs about \$200 and a quad over \$100. Then there is the problem of what to hold it in the air with. A tower is the most popular device, ranging in price from perhaps \$50 for a used tower up to many hundreds of dollars, depending on the type desired. The more expensive types might be crank-up, non-guyed (with tilt over action). Of course a heavy duty rotator such as a Ham M costs around \$130 plus cable, freight, etc., and the cost never seems to end.

This antenna, which may also be built for other bands if desired, is known as a **double inverted vee**, gives good directivity and power gain in the direction chosen, but also allows signals to be heard and worked from the sides and back. Construction is relatively simple and cost can be held to a minimum depending on how it is constructed. The antenna will give a much lower angle of radiation and thus a better signal to DX areas not normally workable with simple antennas such as a dipole.

When finished the antenna looks like the outline of a tent, Fig 1. The lower this antenna is placed to the ground the shorter the elements become due to ground effects. This can be determined by experiment with an SWR meter and cut and try, the easiest method being to allow a foot or two of the element to hang down beyond the end insulator, where it may easily be trimmed. This saves unfastening insulators each time. Fig 2 shows how the connections may be made at the feed-point. Alternatively the elements and co-ax may be soldered together at the appropriate points using egg insulators or similar supports. Theoretically a 1:1 balun should be used at the feed-point, but it does not appear to make much difference.

The antenna will work well with 75 ohm co-ax but the SWR will be slightly higher, although not excessive (less than 1.5 to 1). With 52 ohm co-ax SWR should be near unity, depending somewhat on height and surrounding objects.

If no co-ax is available a twisted pair of wires will serve the same purpose as

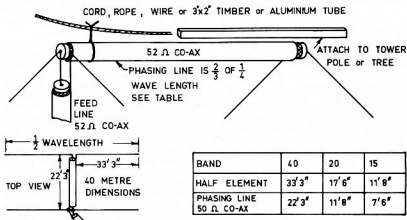


FIG 1

72 ohm co-ax and should substitute quite nicely. Another possibility is 75 ohm twin lead, which will make the whole structure lighter.

For the adventurous, more elements (up to 6 or so) can be added for higher directivity and gain. Element ends are insulated and tied off on bushes, trees or stakes in the ground. The beautiful thing about this antenna is that it is highly transportable, fitting into a box when travelling to a Field

Day site and easily erected in a matter of minutes in emergency conditions. Note when more than 2 elements are used the element length, co-ax length, and spacing are exactly the same. Just add them on.

BAND	40	20	15
HALF ELEMENT	33'3"	17'6"	11'8"
PHASING LINE 50 Ω CO-AX	22'3"	11'8"	7'6"

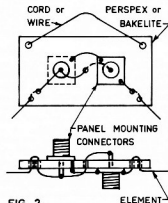


FIG 2

CLUB/ZONE/DIVISION NEWS

• The Publications Committee wishes to advise that the call on AR for space to print material is so great it is not possible to include a section devoted to Divisional, Zone or Club news.

• Arrangements were made with all Divisions that such news would appear in Divisional Bulletins. If so required, and accepted by Divisional Bulletin Editors, Bulletins, when submitted, are carried as inserts in AR mailed to members of the Division concerned.

• It has been agreed however that AR should include an Events Diary to contain **very brief details** of forthcoming events. Items for this Diary **MUST** reach the Editor not later than the 1st of the month prior to publication.

History of a Repeater

GOLD COAST RADIO CLUB
P.O. Box 288,
Southport, Queensland, 4215.

Following many discussions with a handful of repeater minded local Amateurs, the "Gold Coast Radio Club" was inaugurated and affiliated with the WIA, Qld. Division, on 19th October, 1969 for the express purpose of constructing and installing a 2 metre FM Repeater in our area.

Prior to the forming of the Club a couple of us had, in fact, already constructed and tested a working repeater. When the PMG Radio Branch was asked for an experimental licence for actual air testing of the unit we were told that only the WIA or a bona fide group affiliated with the WIA was eligible for such licence.

Shortly after the formation, and necessary affiliation of the Club, application was made through the WIA to the PMG for a permit to operate an experimental repeater. The PMG Permit was issued on 16th Jan., 1970 (the application was dated 24th Nov., 1969) for a period of three months only.

The Repeater had actually been installed and commissioned, on a site on Mt. Tamborine, by 14th Dec., 1969 and had been operational from that date. The equipment in use, at this time, was a PYE PTC8702 25 watt Base Station. The Tx and Rx were separated by some 200 yards and were connected together with a 600 ohm audio and control line. Aerials in use were 5 half-wave elements fed in phase, vertical Colinears, approx 40' above ground. Coverage from this original setup was very good considering the desensitisation problems encountered with the small Tx/Rx frequency spacing. The Tx was on Chan. "C", 146.146, and the Rx was on Chan. "A", 145.854.

After a couple of months operating under these conditions a permanent licence was applied for, along with a frequency change to "Repeater Chan. 1", 146.1 input and 145.6 output. The licence was issued by the PMG on 9th April, 1970 with the call-sign VK4EI/R2. Two months prior to the issue of the licence (Feb. '69) a new solid state, home brewed Rx was installed, in lieu of the old PYE valve unit, and the "A" and "C" frequencies were changed to the new "Ch. 1". With this setup (500kHz separation) and a more sensitive Rx the range of the repeater was much improved. At this point in time the Rx range outdid that of the Tx and a new 50 watt Tx was contemplated to replace the 25 watt unit then in service. Solid state design was looked at but lack of finances (power transistors for VHF are pretty expensive) put our sights back on to a valve device. We were lucky to find, in very good order, a Philips 1674, 50 watt Base Station for \$20. After removing the Rx section from

the base station and incorporating the necessary modifications the 50 watt Tx was put into service during June, 1970.

The site on Mt. Tamborine, 12 miles west of Southport and 40 miles South-West of Brisbane, had an elevation of 1600 feet and, with the now updated equipment, the range of the repeater was all that could be expected. If you have a look at a map of S.E. Qld/N.E. N.S.W., you will get some idea of the coverage, as follows:

Mobile/Mobile contact was possible between Lismore, Gold Coast, Brisbane, Toowoomba, Nambour, Maroochydore and most points in between. There was hardly a location in the Brisbane area where a 10w mobile could not be heard by the repeater, and vice-versa. The whole of the Pacific Highway between Murwillumbah, in the south, and Brisbane in the north, was completely covered, with good signals all the way. The Bruce Highway between Brisbane and Nambour was a little patchy but, none the less, usable all the way. Travelling the Cunningham Highway between Brisbane and Warwick the Repeater was loud and clear until one got 5 miles south of Cunningham's Gap. To coin a much used phrase: "She was a little ripper".

Up until this time the repeater was sited on an Amateur's property and was looked upon as a "manned station" and therefore fancy control gear, lockouts etc., were not required by the "Department". Even automatic station I.D. was not mandatory. A solid state keyer was, however, under construction. This was looked upon more as a "status symbol" rather than a necessity.

Everything was going fine with our repeater until March, 1971, when the "Rot" began to set in. During March, '71 a tropical cyclone, "Dora" by name, very unkindly wiped out both the Tx / Rx aerial systems and the repeater was off the air for some two months while new masts and aerials were organised.

The repeater site was subsequently changed and the repeater was off the air for another three or four months while suitable accommodation was found. During Oct./Nov., 1971 the equipment was resited at another site on Mt. Tamborine. Co-inciding with the sighting the now fully operational I.D. unit was installed.

The new site was below the elevation of the original and coverage of the repeater was very much reduced from its new location. The usual contacts with Brisbane Mobiles were now a thing of the past, much to the dissatisfaction of all concerned. This situation continued, everyone getting used to the reduced coverage, until August, 1972. At this time our Trans-

mitter decided to blow up, all of its own accord. The power transformer was demolished along with the QEO6/40 PA valve and other expensive components and so was taken out of service for much repairing.

After many discussions amongst ourselves, it was decided not to repair the old Tx but to raise some money to purchase a new one. A beautiful Solid State new one! The Club now issued Debenture Stock. With this, and many donations we managed to raise \$1500!! This was far and above all expectations and it was decided to put all this good will towards not only a new Tx but a completely new repeater system.

Around this time two members of the Club purchased, between them, a block of land on Mt. Tamborine. This land was offered to the Club as a new site for our new repeater, which, needless to say, was very gratefully taken up. Investigation, radio range wise, of the site found it to have even greater range than the original location. We were elated and the long, hard haul of dealing with local Council Authorities, and the like, was initiated.

Meanwhile, Philips 1680 equipment had been purchased, along with cavity resonators, power supply, battery, 100' mast, coaxial cable and commercially built aerials. Oh! What a beauty!!

Technical work was carried out on the new project by the pioneers of the old one, Ross VK4ZFD and Mike VK4ZDA while some of the others fought with the local bodies and the drawing board on the Political and Building sides of the project.

Work on the equipment was completed long before any headway had been made with the local Council and our new repeater was air tested from local sites in Brisbane and later on the Gold Coast. It worked like a charm. The built-in time delays, callign initiation, battery telemetry, etc., required a few modifications of the original design for reliability of operation. Once this was accomplished we felt we had the best repeater system in Australia ready for installation. Anyway the equipment was now locked away in a cupboard pending the result of the battle now raging on the Political front.

At long last, in May, 1973, the Shire Council concerned issued the long awaited "Use of Land" and "Building" permits. Work commenced on the preparation of the site almost immediately. Mast and building foundations were put down, requiring much excavation and the pouring of five yards of concrete, all by hand, and a fence was erected around the whole property. Timber, fibre wall sheeting, T&G flooring and other building materials were purchased and erection of the Shack was

started. Everything was now running smoothly and the project was expected to be complete and operational by December, 1973.

In August, 1973, for personal reasons, the new site was no longer available as a location for the Club's repeater, and the construction work had to be terminated.

The present situation with VK4EI/R2 is a completely operational, solid state, repeater, worth some \$1500. Locked away in a cupboard awaiting a site for its installation. Needless to say, an all out effort is presently in action to acquire yet another location for the Gold Coast Radio Club's 2M Repeater. Obviously, with so much money invested, the project will never be shelved or forgotten even though the organisers of the project have been close to "throwing in the towel" on more than one occasion. As soon as another site is available VK4EI/R2 will live again!!

Perhaps other groups contemplating a repeater project can learn something from our past experience. Our feeling now is: forget the equipment side of such a project until the political battle has been fought and won! It would be better, by far, to

have a permanent Repeater Site well and truly tied up before any money or effort is expended on equipment. The technical problems with getting a Repeater operational, even though not an easy task in itself, is far, far, easier than the problem involved in locating and retaining a permanent repeater site.

The moral of the story is: do not rely on verbal agreements. Put aside some of the Repeater Budget for legal assistance in drawing up a contract or binding agreement in respect of the property involved in the project.

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Some thoughts on mobileeering

S. C. Fletcher, VK2ASF
Mailing St., Eden, 2551

This is one of the most fascinating branches of our Hobby and has been indulged in by a large number of amateurs.

Over the years, Mobile Equipment has evolved from crude and mostly cheap junk — through the post war years with some better class from disposals, and some home brew but, in the main, far from satisfactory.

Today, with the advent of Single Sideband together with VOX, and super selective receivers, the situation has changed radically. The impossible has happened, and happening every day — DX while driving along in your motor-car with your wife beside you and the back seat full of kids.

My first entry into this fascinating field of "Mobile", was in 1948, so I am not a new comer. Having just completed a 2,000 mile mobile run, I experienced several deplorable operational procedures, and it is these which prompt me to offer these few notes for mental digestion.

When contacting a mobile station, never forget while you are in the comfort of your lounge, the mobileeers has quite a different kettle of fish. He has all the accoutrements of driving a motor-car, together with observing all driving conditions, watching road signs and the general safety of his passengers. So please let's make it easy for him. This, in the main, is what happens, but unfortunately it does not always apply.

I recently heard two gentlemen openly deride a "mobile", for saying he was "stationary mobile".

Now let's get this cleared up once and for all. The word "mobile" refers to equipment placed in a vehicle, which is capable of moving from place to place under its own power. The word mobile does not in any way infer that the vehicle is moving or doing anything else. It is simply to designate the type of station, and to distinguish the operation from the home licensed station. The main requisite is that the "mobile" indicate his position — this is most important. And further, I say that if the "mobile" is not moving,

then he indicate this fact by stating that he is "stationary mobile". This is information to the receiving stations generally. The two gentlemen(?) previously referred to for deriding a "mobile" don't seem to have a clue in these matters, and I personally object strongly to this type of thing. The mobile station was so embarrassed he didn't know whether he was "mobile", portable or what. This kind of behaviour in the amateur fraternity is deplorable and is only one more blot on the copy book of Amateur Radio.

If you are one of the long-winded type forget it. I had the unhappy experience of having my ears belted for a distance of eight miles along the road without a break — a painful experience. This is ear-bashing at its best (or worst!). Also for the initial call to a mobile please give your call sign distinctly, making full use of phonetics. This makes the mobileeers very happy.

I have heard home stations "talk over" the mobile, with comments in which no one is really interested. This of course is a deliberate breach of regulations and should be dealt with accordingly; apart from being an embarrassment to the mobileeers. As far as reporting goes, please always give an accurate report. Don't give a jazzed up report in an effort to raise the "mobileeers" ego, he is not stupid you know.

Another nice courtesy is — if and when a mobile says "wait" or "standby" then do just that — as he may be turning a corner, passing a vehicle, or just being careful, so please don't jump in and start talking. This is an embarrassment to the "mobileeers" and is operating procedure at its worst level. There are many more points I could mention but I will leave it at that. All these little points make for happy "mobileeering" and allow us to enjoy our hobby to its full.

The mobileeers has gone to a lot of effort (and expense) to make his equipment work well. He is very proud of it and loves every minute, so let us all endeavour, at all times, to make his lot a happy one.

Design of Normal-Mode

Helix Antennae

R. J. F. GUERTLER

Antenna Engineering Aust. Pty. Ltd, Kilsyth

This article first appeared in the Proceedings of the IREE, January, 1972. It is represented here in a summarised form.

Design equations for short helical vertical antennae have been derived by A. G. Kardoian and W. Sichak, however these are inconvenient for the average designer (and amateur radio operator). For the case where the height of the helix is very much smaller than the operating wavelength we obtain two useful equations.

The basic design equation is:

$$n = \frac{30}{f \cdot d} \left[\frac{h}{d} \right]^{\frac{1}{2}}$$

where n = required number of turns of wire
 f = operating frequency of antennae in MHz.

d = diameter of former that wire is wound on in metres.

h = overall height of helical antenna in metres.

The approximate length of the wire, w , in metres, may be found by the equation:

$$w = \frac{30\pi}{f} \left[\frac{h}{d} \right]^{\frac{1}{2}}$$

This reduced to:

$$w = \frac{94.3}{f} \left[\frac{h}{d} \right]^{\frac{1}{2}}$$

where the symbols have their previous definitions.

When a tapered fibreglass whip is used, d should be the mean diameter in metres.

To allow for inaccuracies due to the approximate nature of the formulae, 5 to 10% more turns should be added to the whip initially. Turns may then be removed until resonance occurs.

If desired, the antenna may be set up for one frequency, say 7135MHz, and made to resonate at a slightly lower frequency, say 7070MHz, by the addition of a length of straight rod or wire to the top.

A matching network or transformer will be necessary if a 50 ohm load is required.

The choice of wire size is left to the individual. To prevent corona discharges, the top end of the whip should be smooth and free from sharp points or edges—Technical Editor

an AR special

The 1974 Easter Federal Convention

The admission of the ACT Division into the WIA had been discussed and apparently agreed at the 1973 Convention. When a postal vote was circulated in March merely to formalise the entry one Division invoked the Article 44 veto thus ensuring that the matter had to be raised at the 1974 Convention. The NSW Division felt very strongly that the admission of such a small group must be preceded by the finalisation (a) of the whole question of the proportional (or weighted) voting powers exercisable by the Fed Councillors of the larger Divisions and (b) the satisfactory acceptance of the extra costs which would accrue from the attendance of an additional Fed Councillor at Conventions.

Almost as soon as the Convention was formally opened it dissolved into a Committee of the whole to consider the ACT Division question and at one stage listened to a play-back of the relevant part of the tapes recorded at the 1973 Convention to refresh memories (and obviate a proposed amendment to the Minutes thereof). After discussing a vast range of relevant material the formal session re-convened, a vote was taken, the ACT Division were admitted with effect from 1st April 1974 and the ACT delegation, having been previously accredited (when 4 out of the 6 Divisions had voted in favour of their admission and prior to the receipt of an Article 44 veto) took their place at the Conference table. It was then formally agreed by all delegates that they and the ACT Division would accept and abide by the Agreement of 29.6.1971 until proper accession to it could be done.

During the Convention various working Committees were set up to examine and report back on a number of difficult matters. Time ran out during discussions on the relative Committee's report on proportional voting and this remains to be resolved. The majority in this Committee favoured — (a) normal one for one voting, (b) where two or more Divisions declared a specific agenda item to be of major importance a referendum of all qualified (to vote) members be held and the result to be binding on the Council — Queensland emphatically adhered to the principle of one vote per Fed Councillor — and (c) a rider that the proposal in (b) could not be made on any future alterations to this (proposed) policy.

The Committee considering the application of Article 44 eventually produced a time schedule in diagram format which was accepted subject to being drafted into a suitable form to amend the Constitution. This specified a full 30 day discussion time before Article 44 could be invoked by two Divisions.

The Committee examining an Agreement between the Divisions on membership

boundaries came up with many useful amendments to the draft including a clause stating that appropriate Divisions may agree that in an area in one Division (State) the members can belong to the other Division. Another clause stated that by appropriate Divisional Agreement a person could elect to become a member of a Division other than the State in which he is resident. Any member transferring overseas continues membership in his 'home' Division unless he resigns.

The acceptance of a 'Position Paper' from the Victorian Division and detailed discussions thereon occupied a considerable amount of time, including an almost unprecedented change of ruling by the chair to admit the paper. The Victorian delegation had taken strong exception to the non-acceptance of the paper, had withdrawn and were re-admitted after learning that the paper would, after all, be accepted as an Agenda Item even though it would have been taken as a Special Business Item anyway. The entire incident arose because whilst the Agenda Item (moving that a 'Position Paper' be received and incorporated in the Minutes) was constitutionally received more than 30 days prior to the Convention, the 'Position Paper' itself was not received until 12 days before the Convention. The paper evoked lengthy discussions in Committee on the questions of the EDP programme (it was agreed that improvements were necessary in the EDP accounting sphere), the work of Executive as Directors of the Company (improved management techniques throughout the WIA were required), Executive office (aspirations on Executive were countered by overworked office through volume of business and poor EDP systems — both are under intense current examination), costs of the Executive (remedy is through budget approved by Council) and methods of representations to Authorities by Executive (Council unwise to tie the hands of its Executive).

The budget and financial matters were debated in depth. Councillors required greater detailed analysis in future. Executive's budget covered the expenses of printing and distributing AR, the costs of the Executive office and various other minor items all of which were subject to inflationary trends. Unable to provide for deficits indefinitely because of cash flow problems. It was finally agreed with great reluctance that the Federal element of subscriptions would have to be raised in 1975 from the existing \$7.20 to \$9.80 per member per annum which included a 10c increase in the IARU element to allow for WIA representation at Region 3 Conferences, etc. The increase also included the costs of Conventions which previously were pooled and paid out of Divisional funds on a membership pro-rata basis, it

having been recognised for many years that far distant small Divisions could not otherwise afford participation in a Convention for the expenses of its delegate. The investment of the \$7000 ITU Fund in Commonwealth Bonds was ratified.

Other matters discussed included —

- ☐ Annual Reports, evoking detailed debate and thanks to all the volunteers involved;
- ☐ Call Book, so that Divisions could economically buy extra quantities over and above normal requirements, if a free issue to their members were desired;
- ☐ Subscriptions billing on an anniversary or cyclic basis in conjunction with the EDP accounting improvements;
- ☐ EMC — essential for all to co-operate in this most important field;
- ☐ The WIA fully supports IARU and IARU Region 3;
- ☐ PMG Handbook revision, Executive was supported;
- ☐ Exec. to approach APO —
 - (a) allow RTTY ident. in same mode of transmission;
 - (b) separate-series call-signs for WICEN stations;
 - (c) withhold re-issue of Y and Z calls for 12 months if requested by full 'call-sign' amateur concerned;
 - (d) near miss passes in CW to qualify for Novice Licence;
 - (e) that examiners identify by photograph with applications;
- ☐ Contests — RD Contests — working through repeaters disallowed, VK1 a separate Division.
 - CW to CW to count double.
 - P2 stations may enter as though they were VK9s,
 - VK4PJ perpetual trophy for participants in official contests accepted with acclamation.
- ☐ Advisory Committee members to serve for 2-year period, half the Committee retiring each year.
- ☐ Exec. to examine —
 - (a) Purchasers of transmitters to produce licence to transmit;
 - (b) Convention Agenda Items circulate well in advance and print in AR;
 - (c) If membership tokens can be done through EDP for Divisions;
 - (d) Methods of selling AR on book-stalls.
- ☐ Representation by geographic areas of Divisions by own Fed Councillor at Conventions — long term policy item.
- ☐ YRCS —
 - (a) Committee to re-draft YRCS Constitution;
 - (b) State YRCS organisation to operate under proper Constitutions;
 - (c) Each State Supervisor to make Annual Reports with accounts to the Div. Council.

- ☐ A beacon policy to be formulated;
- ☐ 432 MHz band plan needed;
- ☐ Divisions feed regular information to Fed Public Relations officer.

The 1975 Convention was set down to be held in Victoria over the Anzac Day holiday.

As this short report is necessarily highly condensed any member wishing to have further details on any particular item should contact his Federal Councillor.

STATEMENT OF INCOME & EXPENDITURE

for year ended 31st December, 1973

	1973	1972
INCOME:		
Members' Subscriptions	\$12,874	\$12,914
Publications, Misc. Income	4,473	3,954
Convention	2,468	1,742
Amateur Radio	26,718	17,052
	46,753	35,372
EXPENDITURE:		
Amateur Radio	27,348	16,116
Audit Fees	150	57
Accountancy Fees	189	—
Bank Charges	192	203
Convention Expenses	2,271	2,362
Committee Expenses	393	463
Depreciation	148	167
EDP Expenses	834	1,664
General Expenses	1,210	—
Insurance	144	181
Licence	6	—
Project Australia	491	458
Provision for Bad Debts	200	—
Postage and Freight	1,309	691
Printing and Stationery	1,268	1,783
Rent and Power	1,320	750
Repairs and Maintenance	99	19
Salaries	10,583	10,179
Staff Advertising	25	—
Secretarial	102	1,190
Travelling Expenses	116	217
TOTAL EXPENDITURE:	\$47,168	\$37,718
DEFICIT—To Accumulated Fund:	\$415	\$2,346
BALANCE SHEET		
as at 31st December, 1973		
	1973	1972
MEMBERS' FUNDS:		
Balance at 31st December	\$58	\$2,404
Less Deficit for year	(357)	518
	752	752
Reserve Fund	6,903	6,903
Special Funds—ITU Fund	3,579	2,765
IARU Fund		
	\$10,877	\$10,478
Represented by:		
CURRENT ASSETS:		
Cash at Bank—General A/c	\$3,056	\$2,197
IARU A/c	1,469	1,469
ITU A/c	6,905	6,903
Sundry Debtors (after allowing for Provision for Doubtful Debts—\$200)	6,166	3,514
Stock on Hand—at cost	2,384	1,050
Prepayments	—	1,089
	\$19,980	\$16,222
NON CURRENT ASSETS:		
Furniture and Fittings—less Provision for Depreciation	593	741
	\$20,573	\$16,963
Deduct—		
CURRENT LIABILITIES:		
Sundry Creditors	2,782	4,117
Subscriptions in Advance	6,864	2,368
Loan VK6 Division	250	—
	9,896	6,485
	\$10,877	\$10,478

THE EXECUTIVE'S REPORT TO FEDERAL COUNCIL (1973)

Gentlemen,

It gives me pleasure to present the report of Executive for the period May 1973 until March 1974.

In commencing this report I would be remiss if I did not make mention of the untiring work carried out for the Institute by the Immediate Past President Michael Owen VK3KI who held office for the last four years. I am happy to say Michael accepted the position of IARU liaison officer — a job for which he is well suited, with his countless international contacts.

1. MEMBERS OF THE EXECUTIVE

At the 1973 Convention the following Executive members were appointed. David Wardlaw VK3ADW President, Bill Roper VK3ARZ, Editor, Jack Martin VK3TY, Keith Rogot VK3YD, David Rankin VK3QV and Kevin Connolly VK3ARD.

At the first meeting of Executive for the year Jack Martin was appointed Vice-President and Keith Rogot Treasurer.

During the year Bill Roper had to stand down as a member of Executive. This was because in the re-organisation of the magazine it was decided that the editor should be paid an honorarium and under the Constitution this made him ineligible for membership of the Executive. I will make further mention of this at a later stage in the report.

John Bennett VK3ZA was appointed to the position of Federal publicity officer during the year, and as you can see by his signature under a number of QSP in "Amateur Radio" he has been able to give us some valuable help although not as much as he had hoped as illness in his family curtailed his activity during part of the year.

John was co-opted to Executive to fill the vacancy caused by Bill Roper's resignation.

Also in regular attendance at Executive meetings were the Project Australia Chairman David Hull VK3ZDH and the VHF/UHF Advisory Committee chairman, Peter Wolfenden VK3ZPA. We also had visits from Federal Councillors and Councillors of several Divisions.

3. EXECUTIVE OFFICE

In reporting on the Executive office I would like to pay tribute to Peter Dodd for his loyalty and untiring work on behalf of the Institute.

For reasons of economy we are forced to operate from a very small office. This helps to compound our problems as during the year we have had changes in clerical staff necessitating re-training each time. There is one distinct need in the office which I would like to draw to your attention and that is the requirement for document copying of a more modern nature. No capital funds are available and consequently the old and expensive methods and machines must continue to be used.

Since the formation of the Federal Company together with the Centralisation of records in the EDP system, the nature of the Executive Office has become very much that of a business office and to that end it is virtually essential that a strict routine be maintained on all financial matters.

To enable the Secretary Manager to lighten his load on the EDP side we are now employing part-time, a retired army officer whose sole responsibility is the EDP records. The training period has been relatively lengthy but seems to be paying dividends.

In addition to Federal Council business there is a considerable amount of correspondence to the Executive office which by its very nature needs the attention of the Secretary Manager.

The matter of our office size has always been in our minds. Several possibilities have been investigated but have unfortunately fallen through.

3. EDP

During the year investigations were made into the computer programme and various possible changes were checked for feasibility and cost.

At this stage we have only made one major change and that is we are now producing the address labels for the magazine as Computer print-out from the membership list. This has eliminated the double handling of address records.

At this stage I would like to point out a problem that has arisen in the system and that is that in order for a new member to receive an early copy of "Amateur Radio" the relevant in-

formation must be forwarded to the Executive Office as soon as possible in order that his name be entered in the records. In some cases there have been delays.

4. IARU

During the year Peter Williams VK3IZ resigned as IARU Region 3 association secretary. As you may be aware he was one of the instigators of the formation of the Region 3 Association and I would like to take this opportunity of thanking Peter for his work in this field.

David Rankin VK3QV has been elected the new Region 3 association secretary.

Michael Owen VK3KI a Director of the Regional Association is the WIA liaison officer.

The Directors hope to have a plenary conference in Hong Kong either late this year or early next year to formulate the regional policy towards the 1978 World Administrative Radio Conference. It is also hoped to hold another regional plenary in 1978 just prior to the Conference to finalise regional policy.

As the IARU is now an accredited Agency as far as the ITU is concerned it seems that the Amateur Service may best be served by having IARU representation at the World Administrative Radio Conference rather than national delegations if finances dictate one or the other.

5. CUSTOMS IMPORT DUTIES

The Wireless Institute of Australia, properly recognising the legitimate claims of domestic manufacturers to reasonable Tariff protection, has pressed for many years that specialised Amateur Radio equipment should be recognised as articles suitable for importation duty free or at low rates of duty if nothing suitable or equivalent is produced in Australia.

These efforts are now receiving recognition although it might be expected, succurs carries certain limitation. Work has not stopped in this field but is being continued with the objective of attempting to secure results of a more permanent nature and to this end the Institute presented a case before the Industrial Assistance Commission for the removal of duty on a wide range of Amateur use only equipment.

In a letter dated 15th May to the Institute from the Department of Customs and Excise the following two paragraphs are significant:

"Extensive enquiries have now been conducted in this matter and it has been decided that by-law admission of certain categories of transceivers specially designed for use by licensed amateur radio operators would not be detrimental to local industry. 'Accordingly applications for by-law admission of transceivers accompanied by details of the equipment and supported by evidence that the user is a licensed amateur radio operator will receive consideration in the light of availability of suitably equivalent goods of Australian manufacture.'

Whilst on this subject I must express my thanks to Bill Colborne VK3BP who provided invaluable assistance to the Institute with his expert knowledge on the subject.

6. ACT DIVISION

At the last Federal Convention the following motion was passed:

'That the Canberra Radio Society be admitted to the ACT Division of the Wireless Institute of Australia after fulfilling the requirements of Article 3 of the Articles of Association of the WIA.'

On the 23rd July, 1973 the first general meeting of the Wireless Institute of Australia (ACT Division) was held.

A copy of the Constitution of this newly formed Division was forwarded to the Federal Council for examination.

This Constitution was ruled by the Council to be inconsistent with the general requirement of a Divisional Constitution in that there was no requirement of Amateur Licence holding imposed on full members.

Following this ruling in November the WIA ACT Division amended its articles to comply with the Membership requirements of the uniform Divisional Constitution.

This constitutional amendment is at present under consideration by the Federal Council.

7. REPEATERS

Since the last report a new repeater frequency plan has been accepted as Institute policy. The matter having been finally decided at an extra-

ordinary Convention held in September.

I feel that when changes in Institute policy of this nature are being contemplated careful logical and widespread consideration must be given to the matter.

8. SECTION 44 OF THE CONSTITUTION

This is the section of the constitution which holds over decision on a matter put forward as a postal vote until the next Convention.

This section was invoked again this year on postal vote. It is obvious that this safeguard must remain in the constitution in some form; however as it stands there is no mechanism of delaying a postal vote in order that further information may be sought other than to go the whole way.

The matter is scheduled for discussion at this Convention.

9. NOVICE LICENSING

At the last Convention the proposed novice licence was announced and it was hoped that the first novices would be on the air before the end of the year. However there has been a vast bank-up of legislation in Canberra and I dare not make a prophecy as to when we will hear the first novice.

The last Convention resolved that certain comments be made with regard to the proposed licence.

All were accepted except the proposed use of a segment of the 28MHz band and it was stated that until the time when the proposed consideration was taken to add to additional voice frequencies.

10. AERO MODELLERS

The announcement of the proposed novice licences and their allocation of the 11 metre band caused considerable concern to the Aero modeller fraternity who use this frequency for model control. Their concern was such that they took political action on the matter which caused the PMG's Department to ask the Institute for its attitude.

Discussions have taken place between the aero modellers representatives and the WIA at different levels, although the hazards to models caused by amateur radio operation are not proven. It seems that some band planning arrangement would be the best for the peace of mind of all concerned.

At this stage I would like to comment on the rather deplorable accusations that amateurs are deliberately shooting down model aircraft. While I believe that the majority of Amateurs would abhor these actions I unfortunately feel that there are some irresponsible individuals who hold Amateur licences and have done just this.

It is action such as this that does the image of Amateur radio great harm and gives those who covet our frequencies added ammunition when they make their attacks. Disquiet at the attitude of some amateurs has been expressed to me again this year by members of the staff of the Post office as it was before the immediate Past President.

11. INTERFERENCE

In his opening address for the 1973 RD Contest Mr. Myrie Wright, Chairman of the Australian Broadcasting Control Board, made mention of the matter of interference. I would like to quote a portion of this address which I think has an important message for us all.

'While on the subject of interference, let me also refer to the problems and indeed, the responsibilities we have as protectors of amateur radio — in using the precious radio frequency spectrum.'

'The one important advantage which this national resource possesses compared with many of the other resources, is that the radio spectrum is not irreversibly consumed. It may be misused but with wise management and co-operation between the users the pollution can be recovered.'

Now, in the case of the spectrum, I believe that the broadcasting users and the amateur radio users have a common complaint that they do not have sufficient channels. At the same time we both must keep our own houses in order to ensure that we use the channels which we do have to very greatest advantage and that we do not cause trouble to our neighbours. We must develop good housekeeping methods, reduce the amount of pollution or rubbish which we produce and, above all, we must attempt to keep our pollution within

our own backyards.

As many of you will know, this simple housekeeping in the radio spectrum sense is now being promoted as a specialised topic within the field of radio engineering with the elaborate title of Electromagnetic Compatibility. Following submissions by Victorian Division representatives, the Executive had discussions with Mr. J. Wilkinson (ADG ABCB) and Mr. J. Shannessy (ADG Radio PMG's Department) together with several supporting officials.

As a result of this meeting the Executive formed the opinion that the main concern was that the amateurs would take all possible steps to make sure that their own transmissions were clean and would not cause interference per se.

It was pointed out that at present only licensed transmitting stations were under control as far as interference was concerned. They are in fact only a very small cause of interference and that legislation is being prepared to enable these other sources of Electro Magnetic interference to be controlled.

The standard of performance of the front-ends of TV receivers is also to be covered.

It must be realised that the amateurs are only one of the services that are affected by the poor design of a TV receiver.

To deal with the potential interference problem the Executive has decided to form a WIA Central Interference Committee and urged the States to form their own divisional committees.

Duties of the WIA Central Interference Committee:

1. To inform and advise the Federal Council through the Executive on all matters pertaining to interference as it may involve amateur operators.
2. To liaise with Divisional Interference Committees.
3. To render expert technical advice to Divisional Interference Committees in States where the required expertise might be unavailable.
4. To prepare material for use by the Executive in discussion with the appropriate authorities.
5. To carry out any special investigations which the Federal Council may require.

It is the feeling of Executive that the onus of ceasing to cause interference must rest solely with the Amateur.

Complainants must also bear responsibility to upgrade the efficiency of their systems and to co-operate.

12. MELLISH REEF

Due to a dispute between the parties making up a DXpedition to Mellish Reef some doubts were cast as to the validity of all of the contacts made. The ARRL asked the WIA for information as they were undecided whether to accept contacts to count towards the ARRL DXCC (they were recognised for WIA DXCC).

Michael Owen interviewed all but one involved and reported the evidence placed before him to the ARRL. The final decision is that of the ARRL.

13. INTRUDER WATCH

I would like to thank Alf Chandler VK3LC and his small but keen band of observers for the good work they are putting in. It must also be noted from the annual report of the excellent international relations they have developed.

14. CONTEST MATTERS

This is Peter Brown VK4PJ's last report as Federal Contest Manager as he hands over to Jim Payne VK3AZT after this Convention.

There was some confusion as to the use of repeaters in the RD Contest, which were allowed in the Contest after a last minute request from VK7 had been circulated to all Divisions. However the matter is to be brought before this Convention as a definite policy ruling.

15. AWARD MANAGERS

This year Geoff Wilson VK3AMK has handed over the job of Awards Manager to Brian Austin VK5CA. To both of these gentlemen I would like to say thank you very much. To Geoff for all the work he has done in the past and to Brian for the way he has settled into the job.

16. YWCA

This activity of the WIA is in the capable hands of Bob Guthrie, Federal Co-ordinator.

It is apparent that with the imminent approach of novice licensing there will have to be some changes in concept in this area.

17. AUSTRALIS

The Australis group have again provided something very concrete in amateur radio with the continuing life of Oscar 5 and I would like to express thanks to those who have acted as command stations as this is one of those jobs which although without glamour is essential for the life of the satellite.

Two members of the group have had papers accepted for the Symposium on Satellite Communication for Australia. These are David Hull and Peter Hammer VK3ZPH.

18. EXTRAORDINARY CONVENTION

On the 15th September 1973 an Extraordinary Convention was held in Melbourne on the requisition of the Federal Council for South Australia.

This Convention was called to consider motions originally submitted for decisions as postal motions by the Queensland and Victorian Federal Councils, and held over by implementation of Section 44 of the Constitution by the New South Wales Federal Council. As you are no doubt well aware this Convention set the WIA National Repeater frequency policy.

Many other matters of importance were discussed.

19. INDEPENDENT INQUIRY INTO FREQUENCY MODULATION BROADCASTING

The proposed inquiry was announced during 1973. However the terms of reference were not known. At this stage the VHF/UHF Advisory Committee were alerted as to the possibility of the need for some material.

In December we received directly from the Minister for the Media the terms of reference and the names of the persons who would be carrying out the inquiry.

In view of the terms of reference the VHF/UHF Advisory Committee were asked to prepare a case, which was placed before the Executive for consideration.

At this stage, due to the deadlines set by the Inquiry, it was impossible to circulate it to the Federal Council for prior approval. As a consequence, the Executive authorised the submission of the material to the inquiry.

The material was immediately circulated to the Federal Council.

The material of the submission and a report on the hearing are to be published elsewhere.

I would like to thank Bill Rice VK3ABP and Peter Wolfenden VK3ZPA who presented the Institute's submission.

20. AARTG

Following the last Convention negotiations were carried out with a group of amateurs interested in teleprinter operation and consequently the Australian Amateur Radio Teleprinter Group was formed under WIA sponsorship to cater for the special needs of the RTTY operator.

21. FRC

The Federal Repeater Committee has had a difficult year and the chairman of the group has put forward some ideas as to its future which he hopes will be discussed at this Convention.

22. 76 cm BAND

Questions regarding the frequency requirements on this band have been referred to the VHF/UHF Advisory Committee who will have the benefit of the returned questionnaires. They are in the process of preparing a band plan which they hope to publish soon in order to invite comments.

23. 'AMATEUR RADIO'

I would like to congratulate the Editor of 'Amateur Radio' Bill Rice VK3ARZ and his Committee on the high quality he has achieved despite all the difficulties they have experienced.

During the year the Executive became aware that the workload on the Editor was much greater than anyone could expect from a volunteer.

- There were three possible solutions:
1. That the editorial responsibility would pass back to the Executive Office.
 2. A part time professional journalist be employed.
 3. Pay an honorarium to the existing Editor to compensate for time expended in excess of that we could reasonably expect from a volunteer.
- If the Executive office were to take over it would be necessary to take on further skilled secretarial assistance.

The third alternative which had the approval of the magazine committee seemed the most expedient and was recommended to and approved by the Federal Council at the extraordinary Convention in September.

We have received an assurance from the Post Master General that 'Amateur Radio' will remain in Category B — however this still means a steep rise in the cost of postage.

The matter of advertising in the magazine has, as long as I can remember, been a problem. For most of the year advertising has been handled by the Secretary Manager. Several alternatives were under investigation but urgent Federal Council business often meant delays in making advertising contacts.

Just prior to this report a retired Airforce Officer has been employed part-time for a trial period with the sole duty of handling magazine advertising.

24. MARCONI CENTENARY QSL CARDS
1974 is the centenary of the birth of Marconi and the South Australian Division has, as proposed at the last Convention, produced Commemorative QSL Cards which have proved to be a great success.

25. ASIA PLAUKE
The Executive had pleasure in accepting Mr. Alan Shawsmith's (VK4SS) offer of an award, which is tenable for a period of ten years and that it be named the 'Alan Shawsmith Journalistic Award for Amateur Radio Contributors'.

26. FINANCIAL MATTERS
I am glad to be able to report that it was not necessary to obtain an overdraft from the bank this year despite early prediction that this may happen. I will leave the details of financial matters for the Treasurer to comment on.

27. PMG'S HANDBOOK
Towards the end of the year the PMG Dept. expressed an urgent desire to reprint the Handbook for Amateur operators, and called on the Institute for comment on existing material. To this end we commenced work, forwarding material as soon as produced with the proviso in a covering letter that further comments may come in from the field.

I would like to express my appreciation of the courtesy with which the Radio Branch has always treated us. They are very much aware that there were sometimes extensive delays when dealing with matters concerning amateurs and Mr. Young expressed to me the hope that in the near future they will have an officer whose sole responsibility is Amateur affairs, thus speeding up things considerably.

28. MEMBERSHIP
The following table sets out the membership details as at 31st December 1973 compared with total licensed amateurs (figures courtesy Radio Branch), percentages and totals for the previous year in brackets —

Note	Total Licenses	WIA Members Licensed	% Members to Total Licenses	WIA Members Unlicensed	Total Members
VK1/2 A.	2208 (2111)	982 (953)	44 (45)	262 (344)	1244
VK3	2057 (2021)	1041 (936)	50 (46)	396 (444)	1437
VK4/9 B.	846 (831)	435 (352)	51 (42)	140 (190)	575
VK5/8 C.	808 (787)	428 (393)	52 (49)	166 (207)	623*
VK6	518 (500)	254 (218)	49 (41)	89 (109)	323
VK9xj	239 (231)	152 (153)	63 (66)	63 (81)	215
Totals	6674 (6511)	3292 (3005)	49 (46)	1096 (1345)	4417 (4541)

*Includes 29 Junior Associates (unlicensed).

NOTES

A. Same Headings as above

B. VK9 (PNG) Included for comparison but not new country: estimated 70 licensees in PNG (82 were there on 30.9.73 — the last figures obtainable) of whom 42 were WIA members at 31.12.1973.

C. — 36
VK8 58 —
D. VK0 estimated at 6. Total licensed in 'Other Territories' was 11.

The licensees distribution was shown as—

	Full Licensees	Limited Licensees
VK1	97	31
VK2	1477	604
VK3	1308	749
VK4	528	248
VK5	504	248
VK6	370	141
VK7	154	79
VK8	47	9
	4484	2109 — 6593

I would like to record in this report the technical achievement of Ron Wilkinson VK3AKG in conducting a 1296MHz moon bounce contact with WAZHFA in the United States of America.

In conclusion I would like to thank the other members of Executive for their co-operative and unstinting support in this rather hectic year.

(signed) D. A. WARDLAW
Federal President

AUSTRALIAN VHF/UHF/SHF RECORDS AS AT MAY 1974

NEW SOUTH WALES					
50/52 MHz	VK2ADE to VE7AQQ	8/4/59	7320 miles	(11778 km)	
144 MHz	VK2ATO/2 to ZL2HP	2/1/66	1457 miles	(2344 km)	
432 MHz	VK4ZT/2 to VK4KE/4	12/7/69	219 miles	(352 km)	
576 MHz	No claim				
1296 MHz	AX4ZT/2 to AX4NO/4	12/4/70	250 miles	(402 km)	
2300 MHz	VK2ZAC/2 to VK2BDN/2	19/5/73	99.4 miles	(159.9 km)	
3300 MHz	VK2AHC/2 to VK2SB/2ZND/2	10/2/74	37.0 miles	(59.5 km)	
5650 MHz	VK2AHC/2 to VK2SB/2ZND/2	10/2/74	37.0 miles	(59.5 km)	
10000 MHz	VK2AHC/2 to VK2SB/2ZND/2	10/2/74	37.0 miles	(59.5 km)	
VICTORIA					
50/52 MHz	VK3ALZ to XE1FU	1/5/59	8418 miles	(13545 km)	
144 MHz	VK3ZNC to ZL2HP	13/12/65	1673 miles	(2692 km)	
432 MHz	VK3ZYU to VK5ZDY	1/2/70	406.4 miles	(654 km)	
576 MHz	VK3AOT/3 to VK3KQB/3	11/4/71	147.5 miles	(237 km)	
1296 MHz	VK3AKC to VK7ZAH	17/2/71	273 miles	(439 km)	
2300 MHz	VK3XA to VK3ANW	18/2/50	9.0 miles	(14.5 km)	
3300 MHz	VK3ZGT/ZGK/3 to VK3ZDQ/3	14/12/63	63.0 miles	(101.4 km)	
5650 MHz	No claim				
10000 MHz	No claim				
QUEENSLAND					
50/52 MHz	VK4ZAZ to K6ERG	16/3/58	5305 miles	(8536 km)	
144 MHz	VK4ZAZ to VK7ZAH	1/1/67	1187 miles	(1910 km)	
432 MHz	VK4KE/4 to VK4ZT/2	12/7/69	219 miles	(352 km)	
576 MHz	No claim				
1296 MHz	AX4NO/4 to AX4ZT/2	12/4/70	250 miles	(402 km)	
2300 MHz	and above	No claims			
SOUTH AUSTRALIA					
50/52 MHz	VK5KL to W7ACS/KH6	26/8/47	5361 miles	(8626 km)	
144 MHz	VK5BC to ZL2HP	23/12/65	1957 miles	(3149 km)	
432 MHz	AX5ZKR to AX7ZRO/7	15/3/70	482 miles	(776 km)	
576 MHz	VK5ZLJ/5 to VK5QZ/5	28/12/69	195 miles	(314 km)	
1296 MHz	VK5ZSD to VK3ZHU/5	28/9/69	75 miles	(121 km)	
2300 MHz	No claim				
3300 MHz	No claim				
5650 MHz	No claim				
10000 MHz	VK5CU/5 to VK5ZMW/5	30/12/71	59.5 miles	(95.7 km)	
WESTERN AUSTRALIA					
50/52 MHz	VK6BE to JA8BP	30/10/58	5490 miles	(8833 km)	
144 MHz	VK6KJ to VK3AOT	1/2/70	1517 miles	(2441 km)	
432 MHz	VK6ZDS to VK6LK/6	25/4/66	66 miles	(106 km)	
576 MHz	VK6ZDS/6 to VK6LK/6	15/12/63	101 miles	(163 km)	
1296 MHz	and above	No claims			
TASMANIA					
50/52 MHz	VK7LZ to JA9IL	3/12/59	5462 miles	(8788 km)	
144 MHz	VK7ZAH to VK4ZAZ	1/1/67	1187 miles	(1910 km)	
432 MHz	AX7ZRO/7 to AX5ZKR	15/3/70	482 miles	(776 km)	
576 MHz	No claim				
1296 MHz	VK7ZAH to VK3AKC	17/2/71	273 miles	(439 km)	
2300 MHz	and above	No claim			
N.B.—Australian records are in bold type.					
AUSTRALIAN EME RECORDS					
144 MHz	VK3ATN to K2MWA/2	28/11/66	10417 miles	(16761 km)	
1296 MHz	VK3AKC to W2NFA	6/10/73	10385 miles	(16713 km)	
AUSTRALIAN A.T.V. RECORDS					
432 MHz	VK7EM/T to VK3ZPA/T	13/12/72	256.6 miles	(413 km)	

Audio derived AGC for SSB receivers

By JOHN, VK5QZ (John A. Hackworth)

Reprinted from the SA Wireless Institute Journal, July, 1971.

The following circuit is intended for use with a receiver incorporating a conventional IF amplifier and SSB detector using ordinary transistors. The objectives in its design were:

1. Wide signal handling range.
2. Smooth S-meter characteristic over a wide range.
3. Delayed AVC decay or hanging effect to prevent undesirable pounding on strong signals, and give steady S-meter reading.

EXPLANATION OF THE CIRCUIT

Method of applying AVC to the IF amplifier

It is well known that the technique traditionally employed on valve IF stages to control gain is to apply negative bias to remote cut-off valves.

When applied to transistor stages this method has serious limitations since remote cut-off transistors are not available.

A method which gives improved results is forward biasing of the transistors. The method employed in this circuit is to control gain by reducing the collector voltage so that the transistors in the IF amplifier pass into the so-called triode region of the collector volts but remains fairly linear to small signals.

As a result, large signal handling is assured, and the gain voltage characteristic is very smooth and roughly logarithmic

giving a linear S-meter characteristic.

Fig 3 shows how to wire your IF stage to suit this AVC circuit. The negative point marked (1) is normally connected to earth but this should now be connected to the AVC circuit shown at point (b) in Fig 1. Normally there will be several transistor stages so all the negatives should be connected to the AVC point (b) in Fig. 1.

If your IF amplifier has been wired such that it is not possible to bring out the negative rail, separate from earth, then try the alternative circuit of Fig 2. This takes the place of that part of the AVC circuit to the right of section A-A (Fig 1). This will provide a positive output control voltage for the IF stages. This circuit has not been tried in practice so you may have to juggle with the resistor values for best operation.

Remember that the AVC control voltage (for either method) must be only connected to the IF and/or RF stages and not to the mixer oscillator or BFO detector stages.

AVC Delaying Decay Circuit

The audio signal should be taken from the output of the SSB detector in the receiver, or at any other convenient point between the detector and the volume control. About 100mV is required, depending on the gain of the AY112. This is amplified and rectified by two sets of voltage doubler type circuits, producing negative DC voltages on C6 and C7.

The negative voltage across C7 is applied to the gate of the FET and in turn a negative-going voltage on the base of Q3 produces a reduction of current and thus the voltage drops across terminals (a) and (b).

When the received signal ceases transmission and there is no audio output the voltage on C7 remains constant, thus holding the AVC up until C6, (which is charged to a higher negative voltage than C7) discharges through R9, D5 becomes forward biased and both C6 and C7 discharge rapidly.

The delay time can be altered by varying the value of R9. (10 megohm). The resistors R7 and R8 are inserted to reduce the effects of ignition noise. The attack time can be reduced if desired, by using lower values for R7 and R8.

The diodes used in the writers circuit are Miniwatt type 0A202 but any high back resistance silicon diodes will be satisfactory. (If you don't have 0A202 diodes try the Fairchild series AN1002 etc.)

INITIAL SETTING-UP

The overall performance of the AVC circuit will depend to some extent on the IF gain and the audio output level from the SSB detector stage, therefore you will need to check the following points.

1. S-meter reads too high/low on the scale on no-signal condition. **Remedy:** increase/decrease the value of the resistor,

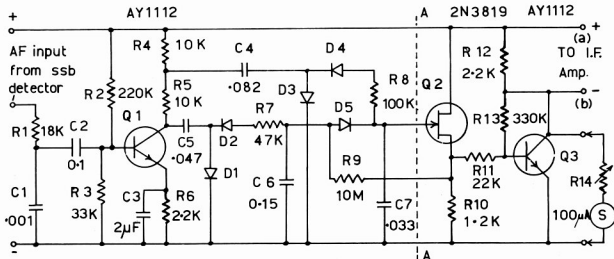


FIG.1. - AUDIO DERIVED AVC FOR SSB RECEIVERS

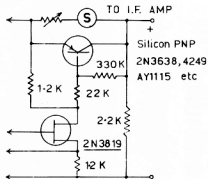


FIG. 2. ALTERNATIVE DC AMP

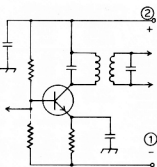


FIG. 3. TYPICAL IF STAGE

R1, connecting to the SSB detector output.

2. Strong signals do not cause full scale reading. Remedy: adjust resistor in series with the meter.

3. Strong signals overload and distort this may occur if using an S meter of low sensitivity such as a 0-1mA movement. If this is so, try reducing the load resistor across terminals (a) & (b), R12, from 2.2K to say 1K. (The purpose of this resistor is to offset the current which bleeds through the S-meter circuit.)

4. The source voltage of Q2 should be about plus 2 volts with the AF input disconnected. If it is not within about 1/2 volt of this, try another FET or adjust value of D10.

a funny thing happened to me in the shack the other night

ALAN SHAWSMITH, VK4SS

35 Whynot Street,
West End, Brisbane, 4101

We all have a fetish about something. I've been an unabashed contest compulsive. Thirty years ago a 48hr. non-stop "sweat" would have been a breeze. Now it's a case of an old dog for a hard road and even with a quota of tricks, a three decade gap between grey hair and youth is too much of a handicap. OT's in my shape don't win contests any more, they just participate.

Now, in any stint, I must confess, the tortures of an aching back, head, wrist or ear soon begin to create discomfort and sap concentration. "Modus operandi" in the radio shack at night is to have the room in darkness except for a small light on the log book. Hearing my small daughter in the bathroom, I called to her to bring me a headache powder from the cabinet. This she did and I hastily unfolded it and gulped it down. It tasted odd but I was too busy to bother and keen to pick up every QSO and point possible.

The hours dragged on and the headache only got worse. At bedtime, my daughter came in for a good-night kiss. I asked her for another powder and washed it down with the dregs of a cup of stale, bitter tea. Again it tasted lousy but I blamed it on the dryness of my mouth. About an hour later I began to feel light-headed and queasy and had to lie down on the shack divan.

"Honey," I called, weakly, to the YF, "You still up?"

"What's wrong?" The voice from the bedroom was unsympathetic.

"I don't feel so good—musta bin somethin' I ate."

"Well it wasn't dinner or supper. You've been too busy to eat."

"I've only had a couple of headache powders and it couldn't be them."

There were sounds of the YF hurriedly getting out of bed. She appeared from the bathroom, switched on the light and held out a box of powders and said, "There's no analgesics; I forgot to get them in."

"Well, what are these—?"

"De-worming powders for the dog."

"De-WHAT?" Rage overcame my aches and pains. I sat up and bellowed, "That bloody hound has more status around here than the rest of the family. Since when does its medication mix with ours?" I sank back miserably on to the divan, "Get the doctor, I feel 'crook'."

"It's eleven p.m. You can ring him up with a tale like that at this hour, but not I!"

The local GP is a pretty good friend, so I dialed him. "er Mac," I said sheepishly. "I've just swallowed a couple of de-worm dog powders. I thought they were aspirin."

"You're back on the brandy. You've had another lapse."

"No, no, it's fair dinkum. I really did and now my insides—"

A great guffaw echoed out of the headset. "Listen pal, you don't need me, you need a vet!"

"Very funny," I said testily. "All I want to know is—well, will I be OK?"

"Ha, ha, ha, they're a harsh purgative you know."

"Well, I have a radio contest going."

"Oh, yes, your usual week-end sub-cult ritual. Well just ignore the symptoms. They'll pass away— and carry on."

I did carry on—all the week-end. But not in the contest.

WARNING

In terms of PMG directions* from 1.3.1974

UNDELIVERABLE and UNDELIVERED A.R.'s WILL NOT BE RETURNED TO SENDER

Unless you advise your CHANGE OF ADDRESS

to the Executive Office
P.O. Box 150, Toorak, Vic., 3142
at least one month in advance

you may miss your A.R. No replacement can be sent to you unless accompanied by 70 cents per issue (subject to copies being available.)

The above applies only when you change your address

* Letter V 228/1/17 of 30.11.1973 (services)

VK ZL OCEANIA DX CONTEST

1973 RESULTS

VK — PHONE									
Call	1.8	3.5	7	14	21	28	Total		
VK1AOP	475	110	6820	2795	1330	11530			
VK1JC			6750	2575	730	10075			
VK1DA			300	629		1755			
VK2XT	210	910	10035	7155	1900	20210			
VK2APK	165	2520	9300	5305	2665	19955			
VK2BPS			6655	2535	730	9950			
VK2JK			4215	2390		6605			
VK2GAX	55	4230	1590	850	6725				
VK2ABC			5820			5820			
VK2BTV			1120			1120			
VK3MR	245	575	5981	3255	55	10111			
AX3SM			3390	4150		7540			
AX3AFW	155	490	4020	925		6600			
VK3AVO			4475			4475			
VK3ARY			3395	645	4040				
AX3FE	110	175	475	230	320	1310			
AX3FHF			4770	8190	1695	14655			
AX3AEZ			8365			8365			
VK4DO			3015			3015			
VK4LZ			1850	930		2935			
VK4JP	55	55	1550	1180	2880				
VK4XY			655			655			
VK4OX			490			490			
VK5WV	375	5725	1715			7815			
VK5RO			4740			4740			
VK6PG			1470	1860		3330			
VK6TU			2720	3525		6245			
VK6RL			1505	345		1850			
VK7GK	110		205	60	205	735			
AX3AZ	465	4845	7940	3200	610	17060			
VK9RY			620	475	185	1290			
VK9EJ			10300			10300			
			1230	1160		2390			

ZL — PHONE									
Call	1.8	3.5	7	14	21	28	Total		
ZL1BKX	200	165	920	11775	5585	3015	21660		
ZL1AXB				11960			11960		
ZL1AVG/BLR									
ZM1AMM				11460			11460		
ZM1AIZ	530	1665	2970	2565	1920	9670			
ZL1MQ	110	165	5175	2210	770	8430			
ZM1BKL			7745						
ZM1AKY	310	55	2145	410	55	2610			
ZL1AMH			610						
ZL2ACP	165	165	7210	4355	610	12505			
ZL2TG			5480	3115	780	9375			
ZM2AWH	2025						2025		
ZL4BO			5835				5835		

VK — CW									
Call	1.8	3.5	7	14	21	28	Total		
VK1AOP	205	1065	1215	660			3205		
VK1AZ	405		905				1310		
VK2APK	940	3485	6430	4325			15795		
VK2XC	400	1770	6810	3770	340	10390			
VK2VN	1835	1715	3930	1305	920	9705			
VK2BQO	55	2255	4270	905		7485			
VK2QL	815	1495	1400	770	560	5625			
VK2BAC			620	820	2395	1490	55	5420	
VK2GAX			525	1250		1775			
VK2BBB	275	3545	4805	4870	100	13595			
VK3MR	890	5235	6470	2725		15320			
VK3BM	55	1005	1665	6000	3845	12570			
VK3J	265	1710	7260	2915		12150			
VK3OP	1570	4185	2105			7860			
VK3AVO			3980			3980			
VK3BRC			135	40	385	980			
VK3RJ	230					230			
VK4XY			1495			1495			
VK5NO	840	3165	7430	4560	155	16450			
VK5FM			3290	1980		5270			
VK5OR			960			960			
VK6PG			3390	4100		9080			
VK6RS	55	375	385	135	270	1220			
VK7RY	165	55	375			595			
VK7GK	1695	6605	6825	2800		17955			
VK8HA	55	725	2250			3030			
VK9EJ			5510			5510			

ZL — CW									
Call	1.8	3.5	7	14	21	28	Total		
ZM1AMM	780	1370	6030	5300	900	14380			
ZM1AVG/BLR			11405			11405			

ZM1AFW									
Call	1.8	3.5	7	14	21	28	Total		
ZL1AIV	2145	1770	1295	1565	735	7510			
ZM1HVV	165	1970	2095	1780	340	6900			
ZM1MQ	190	370	1900	235		5720			
ZL1BLS			5420			5420			
ZM1AMO	5415					5415			
ZM110			345	1955	100	5300			
ZM1TB						3045			
ZM17B	1170	735				1905			
ZM2TG	755	1155	5815	3925	535	11885			
ZL2ACP	455		2100	530		3085			
ZL2AKW						1630			
ZL2AWH	1230					1230			
ZL3IS			8595			8595			
ZL3GQ						6985			
ZL4AW	6985					6985			

VK — ZL — SWL									
Call	1.8	3.5	7	14	21	28	Total		
PHONE									
L30043							1930		
LA0104							3440		
LB0121							2305		
VE7VP	2794						13572		
W2FAFC	120						486		
W2FCR	1848						161		
W6AZD	3268						115		
W3 (U1IBAR)	450						5278		
W3T	172						300		
W4WFS	4264						300		
W4ORT	3125						5282		
W6PLH	16309						2124		
K6SVL	4949						2124		
W6QXS	117						11		
W6DGH	3688						2348		
W6FIT	1820						15		
W6RQZ	15								

PHONE — OCEANIA									
Call	1.8	3.5	7	14	21	28	Total		
C21AA	2912						23135*		
C21NI	1344						1780		
KG6JAR	13020						3888		
KH61J	23716								

NORTH AND SOUTH AMERICA									
Call	1.8	3.5	7	14	21	28	Total		
DL2UU	90						892		
DL8NU	3762						288		
DT2ATL	2498						216		
HAKROV	40						180		
HAKRRL	30*						101AEZ		
HAKKNA	2*						OK2SIR		
H91KJ	280						OZEMI		
I4ELL	1484						SM7ACB		
LA6HL	1728						SK6AW		
LA5OK	36						SP3DO1		
LA LM	20						SP6PZB		
L21OR	132						SP6PWK		
OH3MG	2500						SP5OZ1		
OH2BO	940						SP5XM		
OH2BMG	564						SP9ABU		
OH2HG	40						SP9A1		
OH2BFX	12						YOBZF		
OH7NW	4						UA105-25		
OH3NJ	2						9H4G		

PHONE — WORLD-WIDE									
Call	1.8	3.5	7	14	21	28	Total		
9J2QJ	100						8		
OD5BA	450								
JA1CMD	7686						JE1VTZ		
JA11N	5616						JA2JGE		
JA1QCA	2717						JA2JFS		
JA1JGX	2338						JA2JO		
JA1VVK	1720						JA2JAB		
JA1STN	1034						JA2SAP		
JA1AAT	748						JH2BFT		
JH2NF	682						JH2NWF		
JA1VP	120						JH2LUF		

JA3AAW	8207	JA6CM	539
JA3BLN	1859	JA6YD	400
JA3LVP	1045	JA6CRA	270
JA3XRC	162	JA6FT	100
JA3PGV/4	10767	JA6BG	97
JA3WKK	350	JA7MJ	6235
JA3CMD	310	JA7LJK	147
JA3GND	264	JA7HLO	147
JA3JUN	60	JA7KM	6
JA3BN	2576	JA7RY	1356
JA4TR	50	JA7BM	9214
JA5GAL	912	JA9CIH	1900
JA5IU	588	JA9YE	742
JA5EY	440	JA9MHZ	238
JA5CEK	344	JA9HWZ	210
JA5IVC	40	JA9JFM	672
JA6YTU	8960	JA9JAE	65
JH6CAW	580		

PHONE — U.S.S.R.			
EUROPEAN S.F.S.R.			
UK6LAZ	4179*	UK4NAA	1008*
UK4WAB	2180*	UK3AAC	696*
UK4OM	1786	UK3GM	684
UK4CS	1470	UK4AR	315
UK4NP	1404	UK4MU	304
UK3ABO	1260*	UK4WAC	210*
UK3YAB	1027*	UK3SAB	105*
UK4ICK	1020		

EUROPE — CW

DLNU	3525	OK3KAP	232*
DL9PT	638	OK3RC	152
DT2BJD	2540	OK1DWA	114
DM0QO	2322*	OK1DIM	90
DM4EY	1394	OK3BH	84
DT2BTO	65	OK1TW	40
DN2FBL	8	OK2BJJ	36
G3KSH	160	OK2BGR	24
HGSA	1275	OK1AUP	12
HASKBM	1245*	OK1ATZ	8
H2KRL	598*	OK1KZ	4
HASKFA	192*	OZ7HT	620
HASKNA	147	OZ1W	256
HASKFU	102	OZ5CI	242
HA4XX	96	OZ7XG	32
HABKQX	80*	SMOCC	1066
HASKFV	65*	SMOEX	854
H2BK	378	SMOCCM	228
H8BAUR	126	SMOBY	8
H8SAFI	112	SP9DOI	649
IBQI	576	SP9CTW	462
IZMAD	280	SP6PZB	264
LZIFI	45	SP7BFC	264
LZ1KAU	8	SP8ABU	147
OH1TN	1008	SP7PBC	108
OH6UC	756	SP5AKN	96
OH3NJ	176	SP2AOB	90
OH7NW	132	SP2AVE	72
OH2DN	30	SP8ACN	56
OH8DT	18	SP5PWK	50
OH8PH	2	SP9ABU	40
OK1KOK/P	2970*	SP6OMJ	2
OK1KSO/P	1280*	SP2BFC	2
OK2QX	560	YU1BCD	1188
OK3EA	350	YU1SF	2

JAPAN — CW

JA1ILN	7200	JA4DZ	102
JA1SVJ	6554	JA4AVV	60
JA1CMD	5738	JA5XX	2553
JA1FGB	446	JA5DCH	1617
JA1FCY	670	JA5QV	410
JH1QFW	590	JV5CEK	270
JH1BBT	522	JA6JML	1515
JA1VP	440	JA6DBL	238
JR1FVW	387	JA7IKH	4316
JA1KQX	284	JA7FC	3C59
JF1RPZ	184	JA7JW	400
JE1GFS	95	JA7GAX	315
JA2XPV	893	JA7NU	308
JA2OJ	504	JA8ZO	4440
JH2BFT	3	JA8IEV	288
JA2EG	2	JA8AZC	50
JA3AAW	4296	JA9CH	1892
JH3LKN	3536	JA9CV	1292
JA3EA	2004	JA9SH	182
JH3BJN	2	JA9AD	85
JA4XW	6390	JA9FXH	30
JA4QVM	572	JA9YKE	2

CW — U.S.S.R.

EUROPEAN F.S.R.

UK6LEZ	4475*	UA3NAQ	315
UK3YAB	2580*	UA10AU	240
UA4QM	1616	UA1AAQ	189*
UK4ANA	1020*	UA1FW	180
UK4WAB	1001	UA1RV	157
UA3GM	990	UK4AA1	136*
UA3ABO	741*	UA3ST	125
UK3SAB	640*	UA3DEA	86
UW4NP	567	UW3WH	90
UK3AAC	342*		

ASIATIC F.S.R.

UA0FGM	12222	UA9CBM	513
UA0FBZ	5017	UK9LBA	247*
UA0JO	4452	UA0NH	192
UA0MI	4008	UA0JL	189
UA0NN	2688	UW9WB	86
UW9PT	2300	UK9OBK	105*
UK0SAL	1456*	UA0LAF	60
UW9WL	804	UW0LT	56
UW9AT	670	UA9CBR	48

KALINGRADSK

UA2DP	120		
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UKRAINE

2100*	UB5VY	869
1887*	UK5IAI	462*
1590*	UB5GBD	260
240	UT5LN	44
145*	UK5E1AM	39*
133	UK5GBN	33

WHITE RUSSIA

1616*	UC2WP	168
384	UK2WAE	70*
224		

AZERBAIJAN

1085	UD6DHU	24
261*	UD6BW	18

GEORGIA

96		
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ARMENIA

50		
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TURGOMAN

84		
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UZBEK

768*	UI8CD	405
506*		

TADZHIK

28	UJ8JAS	7
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KAZAKH

52		
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MOLDAVIA

84		
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LITHUANIA

3680*	UK2BAO	100*
120	UP2BAS	50

LATVIA

432*	UO2PJ	80
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WORLD-WIDE — SWL

PHONE

728	14-14758	168
600	11-12387	154
70	10-55048	60
4400	NK1998	682
4144	OK1-15835	462
6885	OK1-17825	216
962	OK1-15689	
248	SM65338	100
1220	SM5-2735	80
25	UA9-145-47	1452
7334	WDX4CE/	
130	SH-W4-122	72
300	UA6-101-765	360
962	UA3-142-198	252
2176	UA9-145-197	1200
179-14257	UC2-169-195	780
572	UC2-006-12	732
352	UC2-006-50	84
320	UD6-001-3	256
304		

CW

494	OK1-17825	80
405	OK3-26239	60
200	OK1-13188	12

CHECK LOGS

SM7ACB		
F68JP		
3D2ER		
DT2BZD		
VE3CEA		
SM6PF		
BZ4PM		
VK1MS		
UA12AM		
UA3ATM		
UW3Y5		
UK4NAB		
UA0ZHN		
UA6AJG		
UK9AAC		
UK0AAC		
UW1OR		
PY1TC		
W4JUK		
LA6U		
W2NCF		
SM6PF		
BZ4PM		
DM2AYK		
UK5ATX		
OK1APS		
DT2CYD		
DM2ZHN		
DM2BU		
SP3CDQ		
VK4RF		
SM5BK1		

*Multi Op. Station

Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

ZERO BEAT AND THE YRCS

What is Zero Beat? This is the magazine of the **Youth Radio Club Scheme**. It is published by Bert Grove of South Australia every month or so, and has approximately a dozen duplicated pages of information for beginners, and certainly suitable as refresher information for those who have been around electronics for some time. The YRCS produce not only a fine little magazine but a variety of small, inexpensive construction kits ranging from BFOs, transistor checkers, signal injectors, RF amplifiers (for sick receivers); and I have no doubt they are designing more kits. These kits are produced by VK3AK, R. J. Callander, 383 Warrigal Road, Burwood, 3125. I think that Bob is assisted by Roger Sewell? on these projects.

Why am I telling you all of this? The YRCS is allied with the WIA and as such each group can be of assistance to the other. I would suggest that newcomers who are just starting in radio/electronics consider seriously joining the YRCS. For information, I suggest that you contact the appropriate State Supervisor; his address is shown in the directory insert in the February issue of AR.

Over the next few issues I hope to present excerpts from Zero Beat which are helpful in themselves and additionally show people the style of article to be found in Zero Beat. Most of the excerpts will be from the section named **Short Circuits**, a section on hints and kinks on better methods to do certain jobs.

SHORT CIRCUITS

Zero Beat June '73

There are many times that a heat sink is required when removing transistors or other small parts from a printed circuit board. Usually the space between the board and part is too small for long nose pliers or other radio tools. An ideal solution to the problem is a pair of ordinary pointed tweezers from the first aid kit. Many more uses will be found for these, particularly when dealing with thin wires, so it will be an asset to keep a pair on hand.

Zero Beat June '68 by H. Smith VK3ZXS

1. Mechanical hum in a radio receiver or amplifier is often caused by loose laminations in the power transformer. This hum can usually be eliminated by tightening the long screws that hold the transformer together; they often extend through the chassis base in certain types of mounting.

2. A short length of fibre insulating sleeving may be used to remove or replace dial lamps in hard to reach places where the hand is too large for the job.

Use sleeving slightly smaller than the glass bulb so that when forced over the bulb it grips it tightly, thus providing a tool that will enable you to unscrew or re-insert the lamp in its socket.

Zero Beat February '69

1. Experimenting with circuits on a bread board construction and want an easy way to mount a toggle switch? Open the eye of a half inch screw eye until the switch barrel fits inside, then clamp the eye back with the pliers. The lock nut on the barrel will hold the switch securely, and the whole assembly can then be fixed to the bread board by screwing into the wood.

2. How many times is a former required for winding that test coil on and nothing available? This is easily overcome by keeping on hand some short pieces of Electricians PVC conduit, which is obtainable in diameters from five-eighths to two inches or larger, and is excellent for nearly all requirements. (Can be lossy at VHF however, VK3UG).

ELECTRO MAGNETIC COMPATIBILITY

Did you know that the September issue of AR is intended to be an issue devoted exclusively to EMC? The 30th of this month is deadline for any articles, comments, etc., on this subject. Being a newcomer you may be experiencing interference or may be causing it, but you do not understand it. Perhaps a letter to the Editor could be useful to highlight some aspect of interference you've come across. The September issue should be of help to many people who are just not aware of the problems of interference. It may come as a surprise that AR has had more articles on this subject over a period of ten years, than any other magazine that I have read. If you wish to contribute, do so now — straight away — if not sooner.

Next month I hope to have some more **SHORT CIRCUITS.**

Try This

with Ron Cook VK3AFW
and Bill Rice VK3ABP

A REQUEST

Since this column started there has been quite a bit of favourable comment in support. Unfortunately there has not been quite enough support in the form of contributions. Every amateur at one stage or another builds a new piece of equipment or modifies some existing gear. In the process he strikes problems and overcomes them. The solutions to these practical problems may be of help to others, so why not put pen to paper. Without your help, the column will not be able to continue. **AID TO SOLDERING**

Capacitors and resistors which have been stored for some time develop tarnished pigtailed and are difficult to solder. One solution is as follows: Take an ink eraser, the hard type with a gritty filling, and carefully slice a number of parallel slots in one edge using a razor blade. The slots should be spaced about 1/16 inch apart and about 1/8 inch deep. Bend the rubber so as to open one of the slots and push the pigtail of the component into the slot so that the body butts up against the rubber. Release the rubber so that it clamps onto the wire and pull the pigtail through the slot. If all the oxide is not removed on this pull-through repeat until the wire is clean and bright.

Commercial Kinks

with Ron Fisher VK3OM

3 Fairview Ave., Glen Waverley, 3150

AC POWER SUPPLIES FOR SOLID STATE TWO METRE TRANSCEIVERS

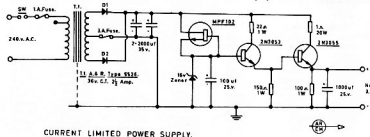
A couple of months ago, when discussing AC power supplies for valve-type car phones, it was noted that low voltage high current supplies presented quite a few problems. At that time we took the other approach and adapted the transceiver to operate from a standard supply delivering high voltage DC and low voltage AC for the filaments. However when we consider AC supplies for solid state rigs running around ten watts output, the current requirements usually do not exceed two amps. At this output, special components such as heat sinks and large transformers are not required.



Homebrew equipment can be made to match the appearance of commercial units.

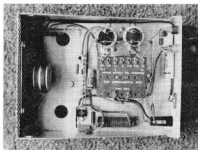
From the constructional point of view, the unit illustrated was designed to match my Trio TR7100 both in size and appearance. With slight changes it could match other popular FM transceivers such as the Yaesu FT2F or FT2FB, as well as the Icom IC20.

The circuit for the unit was borrowed from the September 1969 issue of Amateur Radio, being part ten of the Solid State Transceiver series. The transformer used in this supply is the A&R type 5526. This transformer is rather large for the trans-



CURRENT LIMITED POWER SUPPLY.

The emitter resistor of the 2N3053 shows 150 ohms. This should be increased to 1000 to 1500 ohms.



Underneath view of the AC PSU described in the text.

ceivers mentioned above but would be ideal for solid state rigs running up to twenty watts output. As a saving on both cost and size, I have used an A&R type 6978. This has a 15 volt 2 amp output and of course requires a bridge rectifier, in place of the full wave as used with the larger 5526. Four five-amp diodes were used and any with a PIV of 50 or 100 volts would be suitable. The power supply illustrated uses MR751 diodes rated at 5 amps.

CONSTRUCTION

I do not intend to give any dimensions of the power supply cabinet as these will vary depending on the particular transceiver it has to match. However a few details of methods used will be described. The basic chassis consists of a U-shaped piece of 20 gauge aluminium. Across one end of this a speaker is mounted on a scrap of hardboard with a piece of fine gauge expanded aluminium formed around this. This is then fitted into the chassis by two small right angle brackets and a few dabs of araldite. A panel to carry the output and input connections is now fitted into the other end. Use either hardboard or aluminium depending on your metal bending capabilities. To complete construction another U-shaped section of aluminium is made up to fit over the first piece. Finish with a spray paint to match your particular rig and fasten to the chassis section with four self tapping screws.

The brackets holding the transceiver on top were secured with araldite before painting.

Next month a picture story on a few simple modifications and additions to one of those popular KEN transceivers.

UHF an expanding world with Eric Jamieson VK5LP

Forrest, S.M.A., 5233
Times, GMT

AMATEUR BAND BEACONS

VK0	VK0RSG, Macquarie Island	52.160
	VK0MA, Mawson	53.100
	VK0GR, Casey	53.200
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney *	144.010
	VK3RTG, Vermont	144.700
VK4	VK4WI/2, Townsville	52.800
	VK4WI/1, Mt. Mowbullen	144.400
VK5	VK5VF, Mt. Lofy	53.000
	VK5VF, Mt. Lofy	144.800
	VK5VF, Perth *	52.3015
	VK6RTU, Kalgoolie	52.350
	VK6RTT, Carnarvon	52.900
	VK6RTW, Albany	144.500
	VK6VF, Perth *	145.000
VK7	VK7RTX, Devonport	144.900
VK8	VK8VF, Darwin	52.200
P29	P29GA, Lee, Niugini	52.150
ZL1	ZL1VHF, Auckland	145.100
ZL2	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400
JA	JA1TGY, Tokyo	52.500

* denotes change from last month.

Roger VK2ZRH, of the VK2 Division Beacon Committee, has sent advice that the VK2WI beacon is now on 144.010 MHz, with FSK Ident., 850 Hz shift, moving down in frequency for key up. Initial tests show the frequency to be within 10 Hz per day. The 6 metre beacon will remain as it until the winter months when it will also go to FSK. Other members of the beacon committee are Brian VK2BX and Roger VK2ZTB. Thanks Roger VK2ZRH for your information, also a note regarding the same beacon from Roger VK2ZTB. Thanks to you also.

The VK6 VHF Group News Bulletin mentions the new solid state beacons over there are now nearing completion. The 6 metre beacon is putting out about 6 watts on 52.3016 kHz (apparently the frequency cannot be pulled down the last 1.5 kHz without upsetting the FSK). The 2 metre beacon on 145.0 MHz is putting out about 9 watts. Both beacons are using FSK 850 Hz shift. Main problem now is the provision of new aerials, and it is expected the old aerials will be pressed into service for the time being.

Also very happy indeed to have had a communication from Noel Spalding, Box 757, Lee, Niugini, P29GA, who advises his beacon with that call sign (previously VK5AG) runs an endless test with a one minute break every three minutes, transmitting AJJ from a FTD400/FTV650 combination to a 5 element yagi pointed due south, at 32 feet height. The QTH is from his residence on the campus of the PNG University of Technology, 7 miles NW of Lee.

Noel also passes on the news that he uses a VK3 six metre pre-amp in the front end of the FTV650 with the centre frequency for optimum gain being 52.250. There is a local 53.032 MHz net using five MK JA 6 metre coverage; this enables him to monitor the band between lectures! Thanks for writing Noel; would be very pleased to hear from you again sometime.

NEW HEBRIDES

I note from the pages of the Geelong Amateur Radio Club bulletin that a recent visitor to their club was Ken Myrland VK8KM from New Hebrides.

Ken showed a great amount of interest in six metre operation and left the club with a six metre converter and a circuit of a six metre transverter, so there may be possibilities of another area in the Pacific for next year. Ken can be contacted on most HF bands, particularly 20 metres. He is also interested in 160 metres.

MOONBOUNCE

Lyle VK2ALU of the Illawarra Branch of the WIA, sent along his usual interesting information re air 432 MHz moonbounce activities. The following is condensed from his information, but carries all the interesting bits!

"Since last report major activity of the Group has been directed to construction of RTTY equipment in preparation for scheduled test with K2UJH. Receiving system was demonstrated at February 33rd meeting, using a polar relay for teleprinter input. Circuit received from Rod VK2QJQ for constant current driver in place of polar relay, for reduction in pulse distortion. Tests to date have not yet achieved the improved results. Transmitter frequency source was modified under some difficulty by Eddie VK2ZU to give approximately 170 Hz shift, but frequency accuracy not as good as with phase lock system. It is anticipated the exceedingly stable oven oscillator unit kindly donated by John VK2AU will eventually provide close to one part in 100 million stability and accuracy and also allow FSK to a more closely controlled shift."

"Scheduled tests for 30th March were for five separate tests, and four on the 31st. Stations concerned were K2UJH, W1SL, W5WCD, W0EYE, W0DRL, W4NUS and W0YZS, mostly newcomers to the Group. Then a request was received from GL3TF for two tests with him for the first time, just prior to him shifting QTH. His 16 foot d'ish was thought to be marginal, but 800 watts output helped!

"First series of tests on 30th March resulted in only W1SL being heard. Tests were then made with GL3TF, and delighted to hear him right from the start, and were able to copy both his and our calls, and duly acknowledged by him. Chart recordings and dB meter indicated he was peaking to 6 dB or so above noise. The second contact with him on 31st was even a little better and R were sent both ways quite early in the test period. 31st March tests produced a CW contact with K2UJH, requests for RTTY tests were not acknowledged. The group were very pleased with the contact with GL3TF who is a long time moon-bouncer on 432 and 1296 MHz, but who had previously worked only K2UJH and VET7B8G, after repeated attempts on 432 MHz. This contact established a new 432 MHz EME distance record, eclipsing our previous record contact with K2UJH by a significant, but not yet calculated distance."

"Finally, a 60 foot dish is being re-erected by W3SDZ, who had it dismantled and transported to a more convenient location - what a tremendous job to take it apart and re-erect it! The dish is now 432 MHz EME work in about 6 months time. It will have about 6 dB more gain than the Illawarra Group (VK2AMW) dish."

5.8 GHZ AUSTRALIAN RECORD

Congratulations to Des VK2AHC, Dave VK2SB and Norm VK2ZB for their new Australian record established on 10th February 1974. Des operated on 5840 MHz from Kurrajong Heights, while Dave and Norm operated on 5810 MHz from Belrose, Sydney, the distance being just over 59 km. FM was used and signals were 3 x 9 dBm both ways.

28-inch long home made horn antennas were used, with 17 inch x 13 inch aperture, giving a gain of 23dB. These were fed by 3dB couplers with single 1N23E crystal diodes in the side arms. RK549 klystrons were returned and fed to ferrite isolators.

Des now hopes to produce solid state equipment for use on 3400 and 5840 MHz bands with the aim of extending the operating distances for these bands during the coming year.

Information taken from overseas journals indicates the following distances for 5.8 GHz: England 78 Km; USA 344 Km; which is a world record and established in June 1970.

OSCAR 8

It happened eventually. VK5LP finally had some contacts through Oscar 6! Wally VK5ZWW did a bit of prodding, so the homework was laid aside for a while, the 2 metre rig tuned up to 145.840, and fired into Oscar. Wally threatened that if I did

not work him first our period of being on speaking terms would be ended. He had no fear, the first time I didn't work anybody, and couldn't hear my own signals. Decided the rather anticlimactic communications receiver wasn't receiving SSB on 29 MHz too well, so out came a VK3 six metre converter, coils were pruned and retuned for a half meg. bandpass at 29.5 MHz, and the o'd receiver came to life. On the next attempt, I worked Wally through Oscar, as well as several other interesting stations. So was still speaking! Some further work has been done on that excellent converter, and now it is fed into the 6 metre SSB equipment using a 24 MHz crystal to bring Oscar out on 53+ MHz. The moral of this story really is that it doesn't take a lot of effort to get set up to work through Oscar, and often some gear in the shack can be altered to improve matters, a bit of incentive to get with the strength or whatever you get with, and there are the results! As time permits I shall work more stations, but the homework has first pick of the available time!

MODEL AIRCRAFT

I bring this unusual heading in VHF notes of your notice to say I, together with a lot of others, was perturbed to read elsewhere reports that amateurs were transmitting strong signals on the 27 MHz band and 'shooting down' model aeroplanes.

I find it very hard to believe that amateurs would do this, unless they are very sick amateurs. As usual the reports carried no information to substantiate the claims, and once again the amateurs come in for criticism without proof.

It is probably unfortunate that the model aeroplanes and other crafts are allowed to operate in the 27 MHz band. Apart from the occasional amateurs who may operate there, most usage of that part of the spectrum is concerned with diathermy equipment, RF heating for industrial purposes, and of course the Citizen Band users, legal and illegal alike. A lot of the more commonly used model equipment is not elaborate and really doesn't need to be, but it does lack front-end selectivity. Generally the actuators in such equipment are tone operated, with the tone impressed on a carrier, and some of the simpler gear is not really critical of tone frequency, as long as it is audible. A small section of the spectrum away from the industrial, CB and amateur band would have been desirable for these experimenters, many of whom are quite young, and the not-a-young include myself, having done a bit of work in this direction.

Any amateur has such moronic tendencies to 'shoot down' model planes, please remember the heartache of a youngster who has his plane crash and be destroyed. I know young people who have spent hours on the roadside selling mushrooms, mowing lawns, doing odd jobs to get their plane and equipment together. Let us give them the encouragement if only to help to keep them off the roads for a while, instead of out there killing themselves in fast cars!

That's about all for this month, an enlarged version of what has been happening on the bands can generally be read in '8 UP'. I use their material at times and they use mine, so it's a mutual operation. Think about this in the meantime: 'Each of us is like a bank that issues tolerance, confidence, kindness, love. This currency - provided it is genuine - circulates'.

The Voice in the Hills.

EMC

It is intended that September AR will be an EMC issue . . .

Any 'articles on Interference and EMC generally will be gratefully received.

Dead line - 30th June

Contests

with Peter Brown VK4PJ

Federal Contests Manager, G.P.O. Box 638
Brisbane, Qld., 4001.

THE "FRIENDLY" CONTEST.

REMEMBRANCE DAY CONTEST

August 17th and 18th 1974

Make sure that you and your friends make this the greatest contest ever. Mark your calendar, mark your diary, and make sure that your gear is in top condition.

VHFers . . . get with it this year.

The rules will be in July 'Amateur Radio'. Next month.

CW/CW contests could double.

And this contest will count for the Contest Champion's Trophy.

CONTEST CALENDAR

June 6th — Townsville Pacific Festival Contest.

Join in

June 15th-16th — All Asian phone Contest. No details, but join in.

June 9th-15th — Massachusetts Radio Week. See rules.

July 6th-7th — Venezuelan Contest.

July 27th-28th — County Hunters CW Contest.

August 10th-11th — Argentina phone Contest.

August 24th-25th — All Asian CW Contest.

August 17th-18th — REMEMBRANCE DAY CONTEST.

Massachusetts Amateur Radio Week

Starts 0001 GMT Sunday, June 9th.

Ends 2400 GMT Saturday, June 15th.

You will earn a certificate signed by the Governor of Mass. if you contact 2 Mass. stations.

Exchange will be signal report, state and country.

Certificates will be endorsed for band upon request. Application by July 31st. Include a SASE No. 10, to William C. Holliday, WA1EZA, 22 Trudy Ave., Canton, Mass. 02021.

CONTEST CHAMPION TROPHY

At the recent Federal Convention my offer of a trophy, to be known as the Contest Champion Trophy, was accepted. I have commented previously on the tremendous help to contests given by high scorers, and this trophy is in recognition of this help.

Although rules have yet to be published, in essence the trophy will be for the most successful entrant in Australian contests. I see no reason why the next Remembrance Day Contest should not be the first to count . . . so polish up your gear.

John Moyle Memorial National Field Day

Here are some logs that were not with my original list . . .

24 hour Section (a) VK5SR-1803.

Section (d) VK3ATO-552.

Section (d) phone VK2AFI-2161.

6 hour Section (e) VK3ZFI-34.

So we have made a more noticeable improvement.

Some more comments . . . I note that some of the SWLs are now showing up in contests with call signs . . . Congratulations.

VK4WITs contest effort was all the more noteworthy because of the disability of a mini-cyclone

and 7 inches of rain.

Apparently through no fault of Bill VK3XO, Midland Zones, VK3ATO, log was too late for inclusion in May results . . . they had 2 ops at Mt Alexander with an FT200, FT510, 2 X FT400s, 2 X FT101s and an FL100, an AWA550 and homebrew equipment.

VK3 Division again made a great effort with most teams in the field; Canberra put some 16 operators in the field.

It was interesting to note how well the ZLs joined in the contest this year . . . on the occasion of their field day.

What can be done on low power . . . Russ VK3XX mentioned that he made contacts with VKs 2, 3, 4, 5, 6 and 7 on TWO watts CW . . . no TVI problems.

A few comments on the rules . . . Rule 2 (e). I did not intend that there be multiple ops here . . . VHF ops are just starting to come into these contests . . . If there are likely to be multi-ops stations, VHF only, then they will be catered for. Most stations on 2 (d) had VHF ops. Rule, 14. This states . . . twice on each band . . . If one contact is made whatever mode, another can be made 4 hours later . . . any mode . . . If a contact is made CW/CW, I cannot see that another contact can be made phone/phone or any other mode, until 4 hours have elapsed.

Quite a few were penalised for making a contact on one mode and immediately making another contact on another mode.

Rule 13 and scoring for foreign portable stations. This depends, I guess, on the honesty of the operator . . . If the ZL or DX station is a portable field station 15 points should be claimed . . . however if the other portable station is just at another OTH with 240V reticulated power supply he should be recognised as a 'Home' station. Most contestants know what a portable field station is??

When we get enough operators to keep the portable field stations going perhaps we can drop the DX contacts?

No consideration was given to HF mobiles as a section, because of lack of interest.

Several commented on the consideration given to VHF ops . . . but we would like to see some response in coming contests.

By my count we had about 60 portable field stations that were about 30 ZL portable field stations in the contest.

VKSDA tells that their new address is C/o Box 1418, Darwin, NT 5794.

Jim VK3AZT was appointed Federal Contest Manager at the recent Convention and I trust that they will give him at least as much help as you have given me.

If I have not personally acknowledged your comments please accept my thanks . . . all were most welcome. We'll meet in contests.

I have enjoyed working for you.

THANKS

The Editor wishes to join with the members of Federal Council and the Eastern Convention in expressing thanks to Peter Brown, VK4PJ, for a very good term as Federal Contest Manager. Peter did a splendid job with his Contest work but, even more important to me, sent regular items for the Contests column in AR. Thank you Peter on behalf of all members.

Awards Column

with BRIAN AUSTIN VK5CA
P.O. Box 74, Crafter, SA, 5152

CDM (CERTIFICATE MEDITERRANEO) AWARD

The award is available to licensed amateurs.

Contacts on and after 1st June 1952 are valid.

If the applicant is a member of an IARU Affiliated Society, it is not necessary to submit QSL cards. A list, showing full details of the contacts should be certified by the Awards Manager of an IARU Affiliated Society.

Non-members of an IARU Affiliated Society must submit QSL cards to the sponsor.

The fee for the award is 10 IRCs.

The address for application is: Via Scariatti 31, 20124 Milan, Italy.

Requirements:

Confirmed contacts are required with 22 of the countries shown below, plus 30 stations located on the Italian Peninsula — Italy only.

Countries list for CDM:

EA—Spain	3V—Tunisia
EAE—Balearic Islands	4X—Israel
EAE/CN—Spanish Morocco	5A—Libya
CN—French Morocco	5B—Cyprus
F—France	7X/FA—Algeria
FC—Corsica	9H—Malta
I/T	
MF3	TA—Turkey
AG2—Triele (before 31st	YK—Yugoslavia
December 1957)	YU—Yugoslavia
IS—Sardinia	ZA—Albania
IT—Sicily	ZB—Gibraltar
SU—Egypt	3A2—Monaco
ODS—Lebanon	
SV—Greece	
SV—Dodocanese Is.	
SV—Crete	

WORKED ALL SM 1 (WASM1)

The award is available to licensed amateurs.

Contacts after November 1945 are valid.

Do not send QSL cards. A list, showing full details of the contacts should be certified by the Awards Manager of a National Society.

The fee for the award is 20 IRCs (this award is in the form of a small cloth).

The address for application is: K. Edvardsson, SMCCCE, Hallsgränd 43, 126 57 Hagsten, Sweden.

Rules:

Swedish call areas are SM1, SM2, SM3, SM4, SM5, SM6, SM7 and SM8. SK and SL calls are also valid. SM8 calls (Maritime Mobile) are not valid.

Requirements:

Amateurs must have confirmed contacts with ONE station in EACH of the eight call areas.

HELVETIA 22 (H22 AWARD)

The award is available to licensed amateurs.

Contacts since April 1948 are valid.

Do not send QSL cards. A list showing the call, Canton, signal reports and mode should be certified by the Awards Manager of a National Society.

The award is available for all CW, all phone and mixed modes.

There is no charge for the award. (It is suggested that 2 or 3 IRCs be sent to help defray expenses.)

The address for applications is: Walter Blattner, HB9ALF, Post Box 450, CH 6601, Locarno, Switzerland.

Requirements:

Licensed amateurs must have confirmed contacts with one station in each of the 22 Cantons.

Canton List:

1. Zurich	ZH	12. Schaffhouse	SH
2. Berne	BE	13. Appenzel AR	
3. Lucerne	LU	14. St. Gall	SG
4. Uri	UR	15. Grisons	GR
5. Schwyz	SZ	16. Argovie	AG
6. Unterwald NW	UN	17. Thurgovie	TH
7. Glarus	GL	18. Tessin	TI
8. Zug	ZG	19. Val d'Aoste	VD
9. Fribourg	FR	20. Valais	VS
10. Soleure	SO	21. Neuchatel	NE
11. Basel	BS	22. Geneva	GE

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Magazine Index

With Syd Clark, VK3ASC

HAM RADIO, December 1973

A Solid 80 Watts for Two Metres; Crystal Controlled AFK Generator; Wide Range RF Signal Generator; Two-stage Cavity Filter for Two Metres; Three-terminal Voltage-Regulator IC's; Low voltage Audio AGC Amplifier; Band-pass Filter Design; Introduction to the Digital Mixer; Narrow-band Modifications for the Regency HR-2; Simple High-gain Wire Antenna for High Frequencies; Feedpoint Impedance, Characteristics of Practical Antennas; Improved Logic Test Probe.

January 1974
CW Memory for RTTY Identification; Five-Band Kilowatt Linear; High-impedance Meter Interface; IC Logic Families; Compact Package for Two Metre FM; How to solve Transistor Heat-sink Problems; Simple Lowpass Filter for Audio; Medium Power Toroidal Audio Tuner; Four Band High Frequency Window Antenna.

73 MAGAZINE, January 1974

Wide Range IC Audio Oscillator; Another IC Generator Circuit; Constructing Oscillators for 432 and 1296 MHz; Expanded Range Line Voltage Monitor active Filters; Video Tape Recorders; Inexpensive Decimal Counting Unit; Whistle up a QSO; Tunable 10 Metre Converter; An IC Facsimile Receiver; Converter; A Simple Touchtone Pad for Auto-calling; The \$1,000 Antenna System; Special Considerations for Digital Design; Selectable Voltage Power Supply; A Versatile Code Practice Oscillator; Wiring Has been Made Easy; Compact Mobile; Two Unbreakable Antennas for the TR-22; Leading Zero Suppression for Digital Displays; Automatic Touchtone Dialler; Newcomer and Youth Training in the DARC.

February 1974
Understanding the Slow Scan Monitor; IC Audio Amplifiers; A Simple Sweep Generator for Monitor Scope; New Regulations (1973); Quick'n' Easy 15 or 20 Metre Vertical; Telephone Control and Monitor System; Modifications for Heathkit KG-1005 Digital Readout Clock; Cook a Better Circuit Board; A Variable Q Audio Filter; Another Brown Fuse Indicator for Low Voltage; Building with Ten-Tec Modules; Simple Audio Pre-amp; An Integrated Circuit SWL Receiver; 432er Final Assembly; On the AIR; Transistor Keying Circuit; Low Cost Seven Segment Readout.

Q3, March 1974
The Sunspot Cycle; Worst Case Analysis; Let Your Fingers do the Talking; Plus all the usual features. QST, January 1974
Interdigital Converters for 1296 and 2304 MHz; A Crystal Controlled Converter and Simple Transmitter for 1750 Metre Operation; Negative and High Voltages from a Positive Supply; A 2-KW Amplifier for 144 MHz.

February 1974
Energy Crisis; A Complete 2-Metre FM Transceiver; Rec/Counter for Swan 500 Receivers; Construction of and Using Helical Coils for Antenna Loading; The HW-40 Micro Beam; Computerised Search for Receiver Birdies; Improved Break-in with the Collins 75S-3B; A TTL Circuit Oscillator; A Versatile Scope for the Radio Amateur; Breadboard Revisited; Public Service Input; Doing Amateur Radio Publicity from Alpha to Zulu; Oscar 7 and its Capabilities.

20 Years Ago

with Ron Fisher VK3OM

JUNE 1954

At last, the Limited ACOF had arrived. The editorial page of June Amateur Radio told the whole story of the waiting from May 1953 when the LAOCF was agreed to by the PMG.

It was announced also that all who talked in Morse Code only since January 1953 were now eligible for the Limited ACOF and could apply immediately for a certificate and licence.

Support for the LAOCF was by no means unanimous and many amateurs of the day saw it as the beginning of the end for Amateur Radio. After

all, how could one be an amateur without a knowledge of Morse code.

Trade reviews were not common in AR in those days, but one of the most significant reviews of all time was published in the June 1954 issue. The Geloso Signal Shifter model 4/101. For £10/4/9 here was the answer to the problem of designing an all-band table top transmitter. Over the next few years just about every amateur in Australia must have purchased one of these units.

Looking through the June issue of Amateur Radio the following technical articles were included. A Great Circle Nomograph by A/lan Head VK3AKZ, who told how to design a great circle map and obtain bearings to all parts of the world.

Getting The Most Out of Your Receiver, a Few Hints on Proper Handling. This reprint from QST told amongst other things how to handle a crystal filter — a very misunderstood device.

National Field Day results for 1954 report that VK3AHM scooped the pool in all sections with VK5RQ taking the honours in the home station section.

The Federal QSL Bureau notes written by Ray Jones VK3RJL usually contained interesting snippets of DX news. This month, the hair-raising story of the Hallcrafters sponsored Clipperton Is'and expedition was related.

Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

The Editor,

Dear Sir,

The other evening whilst working in my shack (actually I was designing a new 226 MHz transmitter) I was listening to one of the lower HF bands and a conversation something like the following was heard.

"VK30DE to VK30DE, I've been playing around with ATV on 430 MHz; you ought to try it, it's great fun."

VK30DE to VK30DB: I would like to give it a go, but you can't buy any gear. I think I will wait until the Japanese put some gear on the market first. I'm no good at building stuff. Anyway I wouldn't know how to. I've never built any gear before and I don't think I would like to start now."

This type of conversation appears typical of that which can be heard around the bands especially on the HF bands.

I would like to know what is the modern radio amateur coming to?

I think all radio amateurs should read the extract from EEB in April 1974 Amateur Radio. The statements made there are very typical at the present time.

It is about time that Australian radio amateurs, in fact ALL radio amateurs, forgot some of their 20 metre and other shreds and did a little experimenting and building, and let everybody know that the modern radio amateur is not just an operator of a little black box that he has purchased from Joe Blow up the street for \$4,000 cents, and that three element beam which cost \$3,500 cents could have been built for only 10 dollars if he had only thought before spending.

I hope this puts a little inspiration into the heads of a few Amateurs. If it does the time spent writing this letter has been well spent.

Cyril Maude, VK3ZCK

Key Section

with Deane Blackman VK3TX

Box 382, Clayton, Vic., 3168

This month's notes are devoted to one topic, and that is a proposal to introduce a scheme whereby overseas amateurs can become associate members of the Key Section. They cannot become full members because under the constitution of the Key Section, membership is restricted to holders of VK licences.

This proposal has been under discussion by the divisional co-ordinators for some time, and has

Hamads

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Hallcrafters S27/538 Receiver. R. Graham, VK2ZQJ. QTHR. (02) 642-0122.

BC221 Frequency Meter preferably in full going condition. OR — digital frequency meter to 30 MHz. AR7 Rx in any condition provided dial, gang, IFTs and valve sockets are OK — preferably with all coil boxes. Send prices and details to VK3ZIF. QTHR. Ph. (03) 89 4645.

Back issues of A.R. April 73, July 72. As 1968 and earlier. Preferably in good condition as they are for binding into volume form. Write price and condition and send to VK2ZME. Martin Hood, 7/46 High St., Randwick.

been accepted in principle by the Federal Executive of the Institute. However, because its operation will touch you if you work DX on CW (at least I think it will), I thought it best to let you know what we have in mind. If you have any strong thoughts let me know about them before June 30.

We are proposing to offer associate membership to overseas amateurs who work 20 members of the Key Section. All Members of the Section have a membership number, and applicants for associate membership would have to quote this number in their log extract when applying. It is proposed to give all associates a certificate.

There is in many ways a rather modest enterprise, but it has the same motivation as the rules for local amateurs, namely, to offer encouragement to people to enjoy CW operating irrespective of ability. All going well, I would hope the plan to start in 1975.

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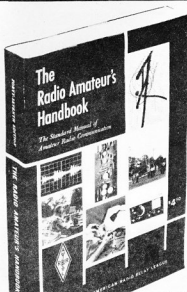
"QST," March, 1959.

"Amateur Radio," Dec. 1959

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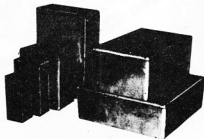
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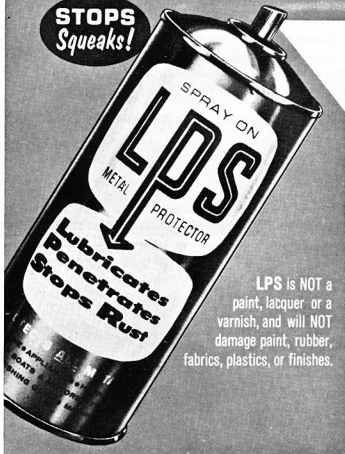
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AC101	1.0	10	10	AV140	1.50	1.40	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC105	5.00	10.00	10.00	AV140	1.50	1.40	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC108	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC108	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC108	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC117/128 Pin	1.20	1.10	1.10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC117	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC118	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC118	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC118/188 Pin	1.40	1.30	1.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AC118/188 Pin	1.40	1.30	1.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AD101	1.40	1.30	1.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AD102	1.40	1.30	1.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AD102/182 Pin	2.80	2.70	2.70	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF114	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF115	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF115	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117	1.0	10	10	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117/182 Pin	3.40	3.30	3.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117/182 Pin	3.40	3.30	3.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117/182 Pin	3.40	3.30	3.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45
AF117/182 Pin	3.40	3.30	3.30	AV141	1.20	1.10	BD339	1.50	1.45	NA3205S	2.20	2.30	2N2626	50	45

IC'S

547400N	1.0	10	10	100	100
547401N	1.0	10	10	100	100
547402N	1.0	10	10	100	100
547403N	1.0	10	10	100	100
547404N	1.0	10	10	100	100
547405N	1.0	10	10	100	100
547406N	1.0	10	10	100	100
547407N	1.0	10	10	100	100
547408N	1.0	10	10	100	100
547409N	1.0	10	10	100	100
547410N	1.0	10	10	100	100
547411N	1.0	10	10	100	100
547412N	1.0	10	10	100	100
547413N	1.0	10	10	100	100
547414N	1.0	10	10	100	100
547415N	1.0	10	10	100	100
547416N	1.0	10	10	100	100
547417N	1.0	10	10	100	100
547418N	1.0	10	10	100	100
547419N	1.0	10	10	100	100
547420N	1.0	10	10	100	100
547421N	1.0	10	10	100	100
547422N	1.0	10	10	100	100
547423N	1.0	10	10	100	100
547424N	1.0	10	10	100	100
547425N	1.0	10	10	100	100
547426N	1.0	10	10	100	100
547427N	1.0	10	10	100	100
547428N	1.0	10	10	100	100
547429N	1.0	10	10	100	100
547430N	1.0	10	10	100	100
547431N	1.0	10	10	100	100
547432N	1.0	10	10	100	100
547433N	1.0	10	10	100	100
547434N	1.0	10	10	100	100
547435N	1.0	10	10	100	100
547436N	1.0	10	10	100	100
547437N	1.0	10	10	100	100
547438N	1.0	10	10	100	100
547439N	1.0	10	10	100	100
547440N	1.0	10	10	100	100
547441N	1.0	10	10	100	100
547442N	1.0	10	10	100	100
547443N	1.0	10	10	100	100
547444N	1.0	10	10	100	100
547445N	1.0	10	10	100	100
547446N	1.0	10	10	100	100
547447N	1.0	10	10	100	100
547448N	1.0	10	10	100	100
547449N	1.0	10	10	100	100
547450N	1.0	10	10	100	100
547451N	1.0	10	10	100	100
547452N	1.0	10	10	100	100
547453N	1.0	10	10	100	100
547454N	1.0	10	10	100	100
547455N	1.0	10	10	100	100
547456N	1.0	10	10	100	100
547457N	1.0	10	10	100	100
547458N	1.0	10	10	100	100
547459N	1.0	10	10	100	100
547460N	1.0	10	10	100	100
547461N	1.0	10	10	100	100
547462N	1.0	10	10	100	100
547463N	1.0	10	10	100	100
547464N	1.0	10	10	100	100
547465N	1.0	10	10	100	100
547466N	1.0	10	10	100	100
547467N	1.0	10	10	100	100
547468N	1.0	10	10	100	100
547469N	1.0	10	10	100	100
547470N	1.0	10	10	100	100
547471N	1.0	10	10	100	100
547472N	1.0	10	10	100	100
547473N	1.0	10	10	100	100
547474N	1.0	10	10	100	100
547475N	1.0	10	10	100	100
547476N	1.0	10	10	100	100
547477N	1.0	10	10	100	100
547478N	1.0	10	10	100	100
547479N	1.0	10	10	100	100
547480N	1.0	10	10	100	100
547481N	1.0	10	10	100	100
547482N	1.0	10	10	100	100
547483N	1.0	10	10	100	100
547484N	1.0	10	10	100	100
547485N	1.0	10	10	100	100
547486N	1.0	10	10	100	100
547487N	1.0	10	10	100	100
547488N	1.0	10	10	100	100
547489N	1.0	10	10	100	100
547490N	1.0	10	10	100	100
547491N	1.0	10	10	100	100
547492N	1.0	10	10	100	100
547493N	1.0	10	10	100	100
547494N	1.0	10	10	100	100
547495N	1.0	10	10	100	100
547496N	1.0	10	10	100	100
547497N	1.0	10	10	100	100
547498N	1.0	10	10	100	100
547499N	1.0	10	10	100	100
547500N	1.0	10	10	100	100

D PACKS ALL \$150 EACH				
D1	20	Ref	Stop Transistors PNP	
D2	20	Ref	Stop PNP Transistors PNP	
D3	10	50C	12C transistors	
D4	10	50C	12C transistors	
D5	10	50C	12C transistors pnp high gain	
D6	10	50C	12C transistors	
D7	10	50C	12C 75 noise transistors	
D8	10	50C	12C 172C Complementaries pairs PNP / NPN	
D9	10	50C	12C 172C Complementaries pairs PNP / NPN	
D10	10	50C	12C 174 H/F type transistors	
D11	10	50C	12C 174 H/F type transistors	
D12	10	50C	12C 174 H/F type transistors	
D13	10	50C	12C 174 H/F type transistors	
D14	10	50C	12C 174 H/F type transistors	
D15	10	50C	12C 174 H/F type transistors	
D16	10	50C	12C 174 H/F type transistors	
D17	10	50C	12C 174 H/F type transistors	
D18	10	50C	12C 174 H/F type transistors	
D19	10	50C	12C 174 H/F type transistors	
D20	10	50C	12C 174 H/F type transistors	
D21	10	50C	12C 174 H/F type transistors	
D22	10	50C	12C 174 H/F type transistors	
D23	10	50C	12C 174 H/F type transistors	
D24	10	50C	12C 174 H/F type transistors	
D25	10	50C	12C 174 H/F type transistors	
D26	10	50C	12C 174 H/F type transistors	
D27	10	50C	12C 174 H/F type transistors	
D28	10	50C	12C 174 H/F type transistors	
D29	10	50C	12C 174 H/F type transistors	
D30	10	50C	12C 174 H/F type transistors	
D31	10	50C	12C 174 H/F type transistors	
D32	10	50C	12C 174 H/F type transistors	
D33	10	50C	12C 174 H/F type transistors	
D34	10	50C	12C 174 H/F type transistors	
D35	10	50C	12C 174 H/F type transistors	
D36	10	50C	12C 174 H/F type transistors	
D37	10	50C	12C 174 H/F type transistors	
D38	10	50C	12C 174 H/F type transistors	
D39	10	50C	12C 174 H/F type transistors	
D40	10	50C	12C 174 H/F type transistors	
D41	10	50C	12C 174 H/F type transistors	
D42	10	50C	12C 174 H/F type transistors	
D43	10	50C	12C 174 H/F type transistors	
D44	10	50C	12C 174 H/F type transistors	
D45	10	50C	12C 174 H/F type transistors	
D46	10	50C	12C 174 H/F type transistors	
D47	10	50C	12C 174 H/F type transistors	
D48	10	50C	12C 174 H/F type transistors	
D49	10	50C	12C 174 H/F type transistors	
D50	10	50C	12C 174 H/F type transistors	
D51	10	50C	12C 174 H/F type transistors	
D52	10	50C	12C 174 H/F type transistors	
D53	10	50C	12C 174 H/F type transistors	
D54	10	50C	12C 174 H/F type transistors	
D55	10	50C	12C 174 H/F type transistors	
D56	10	50C	12C 174 H/F type transistors	
D57	10	50C	12C 174 H/F type transistors	
D58	10	50C	12C 174 H/F type transistors	
D59	10	50C	12C 174 H/F type transistors	
D60	10	50C	12C 174 H/F type transistors	
D61	10	50C	12C 174 H/F type transistors	
D62	10	50C	12C 174 H/F type transistors	
D63	10	50C	12C 174 H/F type transistors	
D64	10	50C	12C 174 H/F type transistors	
D65	10	50C	12C 174 H/F type transistors	
D66	10	50C	12C 174 H/F type transistors	
D67	10	50C	12C 174 H/F type transistors	
D68	10	50C	12C 174 H/F type transistors	
D69	10	50C	12C 174 H/F type transistors	
D70	10	50C	12C 174 H/F type transistors	
D71	10	50C	12C 174 H/F type transistors	
D72	10	50C	12C 174 H/F type transistors	
D73	10	50C	12C 174 H/F type transistors	
D74	10	50C	12C 174 H/F type transistors	
D75	10	50C	12C 174 H/F type transistors	
D76	10	50C	12C 174 H/F type transistors	
D77	10	50C	12C 174 H/F type transistors	
D78	10	50C	12C 174 H/F type transistors	
D79	10	50C	12C 174 H/F type transistors	
D80	10	50C	12C 174 H/F type transistors	
D81	10	50C	12C 174 H/F type transistors	
D82	10	50C	12C 174 H/F type transistors	
D83	10	50C	12C 174 H/F type transistors	
D84	10	50C	12C 174 H/F type transistors	
D85	10	50C	12C 174 H/F type transistors	
D86	10	50C	12C 174 H/F type transistors	
D87	10	50C	12C 174 H/F type transistors	
D88	10	50C	12C 174 H/F type transistors	
D89	10	50C	12C 174 H/F type transistors	
D90	10	50C	12C 174 H/F type transistors	
D91	10	50C	12C 174 H/F type transistors	
D92	10	50C	12C 174 H/F type transistors	
D93	10	50C	12C 174 H/F type transistors	
D94	10	50C	12C 174 H/F type transistors	
D95	10	50C	12C 174 H/F type transistors	
D96	10	50C	12C 174 H/F type transistors	
D97	10	50C	12C 174 H/F type transistors	
D98	10	50C	12C 174 H/F type transistors	
D99	10	50C	12C 174 H/F type transistors	
D100	10	50C	12C 174 H/F type transistors	

SILICON RECTIFIERS - REFRESH VALUE				
1 Amp (1000V)	10	10	10	10
1 Amp (500V)	10	10	10	10
1 Amp (250V)	10	10	10	10
1 Amp (100V)	10	10	10	10
1 Amp (50V)	10	10	10	10
1 Amp (25V)	10	10	10	10
1 Amp (10V)	10	10	10	10
1 Amp (5V)	10	10	10	10
1 Amp (2.5V)	10	10	10	10
1 Amp (1.25V)	10	10	10	10
1 Amp (0.625V)	10	10	10	10
1 Amp (0.3125V)	10	10	10	10
1 Amp (0.15625V)	10	10	10	10
1 Amp (0.078125V)	10	10	10	10
1 Amp (0.0390625V)	10	10	10	10
1 Amp (0.01953125V)	10	10	10	10
1 Amp (0.009765625V)	10	10	10	10
1 Amp (0.0048828125V)	10	10	10	10
1 Amp (0.00244140625V)	10	10	10	10
1 Amp (0.001220703125V)	10	10	10	10
1 Amp (0.0006103515625V)	10	10	10	10
1 Amp (0.00030517578125V)	10	10	10	10
1 Amp (0.000152587890625V)	10	10	10	10
1 Amp (0.0000762939453125V)	10	10	10	10
1 Amp (0.00003814697265625V)	10	10	10	10
1 Amp (0.000019073486328125V)	10	10	10	10
1 Amp (0.0000095367431640625V)	10	10	10	10
1 Amp (0.00000476837158203125V)	10	10	10	10
1 Amp (0.000002384185791015625V)	10	10	10	10
1 Amp (0.0000011920928955078125V)	10	10	10	10
1 Amp (0.00000059604644775390625V)	10	10	10	10
1 Amp (0.000000298023223876953125V)	10	10	10	10
1 Amp (0.0000001490116119384765625V)	10	10	10	10
1 Amp (0.00000007450580596923828125V)	10	10	10	10
1 Amp (0.000000037252902984619140625V)	10	10	10	10
1 Amp (0.0000000186264514923095703125V)	10	10	10	10
1 Amp (0.00000000931322574615478515625V)	10	10	10	10
1 Amp (0.000000004656612873077392578125V)	10	10	10	10
1 Amp (0.0000000023283064365386962890625V)	10	10	10	10
1 Amp (0.00000000116415321826934814453125V)	10	10	10	10
1 Amp (0.000000000582076609134674072265625V)	10	10	10	10
1 Amp (0.0000000002910383045673370361328125V)	10	10	10	10
1 Amp (0.00000000014551915228366851806640625V)	10	10	10	10
1 Amp (0.000000000072759576141834259033203125V)	10	10	10	10
1 Amp (0.0000000000363797880709171295166015625V)	10	10	10	10
1 Amp (0.00000000001818989403545856475830078125V)	10	10	10	10
1 Amp (0.000000000009094947017729282379150390625V)	10	10	10	10
1 Amp (0.0000000000045474735088646191895751953125V)	10	10	10	10
1 Amp (0.00000000000227373675443230959478759765625V)	10	10	10	10
1 Amp (0.000000000001136868377216154797393798828125V)	10	10	10	10
1 Amp (0.0000000000005684341886080773986968994140625V)	10	10	10	10
1 Amp (0.00000000000028421709430403869934844970703125V)	10	10	10	10
1 Amp (0.000000000000142108547152019349674224853515625V)	10	10	10	10
1 Amp (0.000000000000071054273576009674837112427265625V)	10	10	10	10
1 Amp (0.000000000000035527136788004837418556211328125V)	10	10	10	10
1 Amp (0.0000000000000177635683940024187092781056640625V)	10	10	10	10
1 Amp (0.00000000000000888178419700120935463905283203125V)	10	10	10	10
1 Amp (0.000000000000004440892098500604677319526416015625V)	10	10	10	10
1 Amp (0.0000000000000022204460492503023386597632080078125V)	10	10	10	10
1 Amp (0.00000000000000111022302462515116932988160400390625V)	10	10	10	10
1 Amp (0.000000000000000555111512312575584649440802001953125V)	10	10	10	10
1 Amp (0.0000000000000002775557561562877923247204010009765625V)	10	10	10	10
1 Amp (0.00000000000000013877787807814389616236020050048828125V)	10	10	10	10
1 Amp (0.000000000000000069388939039071948081180100250244140625V)	10	10	10	10
1 Amp (0.0000000000000000346944695195359740405900501251220703125V)	10	10	10	10
1 Amp (0.00000000000000001734723475976798702029502506256103515625V)	10	10	10	10
1 Amp (0.000000000000000008673617379883993501014751253128067890625V)	10	10	10	10
1 Amp (0.0000000000000000043368086899419967505073756265640339453125V)	10	10	10	10
1 Amp (0.00000000000000000216840434497099837525368781328201697265625V)	10	10	10	10
1 Amp (0.000000000000000001084202172485499187626843906641008486328125V)	10	10	10	10
1 Amp (0.0000000000000000005421010862427495938134219533205042431640625V)	10	10	10	10
1 Amp (0.00000000000000000027105054312137479690671097666021212158203125V)	10	10	10	10
1 Amp (0.00000000000000000013552527156068739845335548833010606093828125V)	10	10	10	10
1 Amp (0.000000000000000000067762635780343699226677744165053030469140625V)	10	10	10	10
1 Amp (0.0000000000000000000338813178901718496133388720825265152345703125V)	10	10	10	10
1 Amp (0.00000000000000000001694065894508592480666943604126325761728515625V)	10	10	10	10
1 Amp (0.000000000000000000008470329472544296403334718020631628808642578125V)	10	10	10	10
1 Amp (0.00000000000000000000423516473627214801666735901031564404322140625V)	10	10	10	10
1 Amp (0.00000000000000000000211758236813607400833367950515782220216103515625V)	10	10	10	10
1 Amp (0.00000000000000000000105879118406803700416668975257891110108051953125V)	10	10	10	10
1 Amp (0.00000000000000000000052939559203401850208334487628945550540409765625V)	10	10	10	10
1 Amp (0.000000000000000000000264697796017009250104167438144727752702048828125V)	10	10	10	10
1 Amp (0.0000000000000000000001323488980085046250052083719072363885102244140625V)	10	10	10	10
1 Amp (0.00000000000000000000006617444900425231250026041895361819255011220703125V)	10	10	10	10
1 Amp (0.000000000000000000000033087224502126156250013020924476895775056110103515625V)	10	10	10	10
1 Amp (0.000000000000000000000016543612251063278125000651046223844888877528055593828125V)	10	10	10	10
1 Amp (0.0000000000000000000000082718061255316390625000325522312244				

NOVEMBER 1973—Continued

VK3YHP—H. J. Payne, 37 Palaroo Street, Swan Hill, 3555.
 VK3ZCZ—M. R. Osborne, 48 Nirrings Avenue, Aspendale, 3195.
 VK3ZIM—A. S. Wedgewood, 16/9 Latrobe Street, Mentone, 3184.
 VK3ZOU—J. R. Angie, 45 Heatherdale Road, Ringwood, 3134.
 VK3ZRV—J. C. Weir, 221 St. Helena Road, Greensborough, 3038.
 VK3ZVC—J. R. Sanders, Change postcode to 3033.
 VK3ZVO—T. P. Cowley, 10 Altkan Street, Clifton Hill, 3068.
 VK3ZY—J. R. Wells, 6/570 Riversdale Road, Camberwell, 3124.

QUEENSLAND
 VK4KV—M. J. Y. McCartney, Flat 3, 56 Best Street, Yeronga, 4007.
 VK4MX/T—J. R. Martin, Presbyterian Manse, Fincit Hutton, 4741.
 VK4TU—K. W. Cellis, Station: 6 Cook Street, Goodwood, 4390.

Postal: P.O. Box 238, Goodwood, 4390.
 VK4ZLY—L. R. Yarrow, M/5 194 Gatton, 4343.
 VK4ZNS—J. McPherson, 4 Irita Street, Galilee, 4300.
 VK4ZLI—A. G. Linning, 14 Augustus Street, Corinda, 4075.
 VK4ZMP—M. P. Moody, 992 South Pine Road, Everton Hills, 4053.
 VK4ZSD—L. S. Dmilitre, 5 Greville Street, Biloela, 4715.

SOUTH AUSTRALIA
 VK5PW—P. W. Riedel, 20 Ways Road, Manningsham, 5008.

WESTERN AUSTRALIA
 VK6HD—M. E. Bazley, 8 James Road, Kalamunda, 6076.
 VK6OE—A. W. Storm, Cherokee Village Mobile Home, Wairoa Road, Wanneroo, 6065.
 VK6WY—W. G. Wyika, 69 Evans Street, Shenton Park, 6008.
 VK6ZDY—J. C. Jackson, 60 Anzac Terrace, Bassendean, 6054.

TASMANIA
 VK7JD—C. A. Danforth, 3 Leonard Court, Ocean View, 7320.
 VK7JG—G. C. Johnston, Main Road, Ouse, 7461.
 T.P.N.G.
 VK7HF—Rev. H. J. Fischer, Station: Papilal, Manus Island.
 Postal: P.O. Box 146, Lorengau.

CANCELLED
VICTORIA
 VK3FJ—C. R. Nelson, Now VK3WC.
 VK3JZ—M. Matthews, Not renewed.
 VK3ABC—F. C. Voight, Not renewed.
 VK3ZNO—R. A. Jones, Now VK3WL.
 VK3ALU—K. A. Pailiser, Now VK3JG.
 VK3BEJ—C. C. Lile, Now VK3VQ.
 VK3YD—C. J. Jarvis, Not renewed.
 VK3YDV—G. S. Pritchard, Not renewed.
 VK3ZCS—G. G. Baker, Transferred to South Australia.

QUEENSLAND
 VK4GQ—G. Heilbronn, Deceased.
 VK4OG—Gold Coast Radio Club. See VK4WIG.
 VK4ZV—R. J. Williams. See VK4UI.
 VK4ZKV—H. K. Hyle, See VK4YE.
 VK4ZRL—R. L. Resack. See VK4EN.
SOUTH AUSTRALIA
 VK5OW—B. E. Beckman, Not renewed.
 VK5UT—P. F. Allen, Not renewed.
 VK5ZPA—P. A. Reichelt, Not renewed.
 VK5ZKZ—W. S. Barnes, Not renewed.

WESTERN AUSTRALIA
 /K6OM—R. C. Marschke, Transferred to ACT.

TASMANIA
 VK7FM—T. F. Moore, 23 McGuinness Crescent, Lenah Valley (Non renewal of licence), 7006.
 VK7ZAR—R. A. J. Reynolds, 46 Jennings Street, New Town (Transferred to Victoria), 7006.
 T.P.N.G.

VK9LP—L. Pedrini, Station: Portable throughout PNG.
 Postal: P.O. Box 88, Lae.

VK9AV—E. V. Avenell, Station: St. Michael's Estate, Kiata.
 Postal: P.O. Box 101, Kjata, Bougainville.

NEW STATIONS — DECEMBER 1973
AUSTRALIAN CAPITAL TERRITORY
 VK1JR—J. R. Watson, 161 Brigalow St., Lyneham 2602.

1TH—H. W. Howell, 130 Bandjalong Cr., Aranda 2514.

1YL—M/S S. Britton, 27 Galway Pl., Deakin 2600.

NEW SOUTH WALES
 VK2SB—D. I. Ralph, 7 Alfonsa Ave., Forestville 2087.

2AGY—A. de H. Christy, 218 Keir St., Scone 2337.

2AGM—G. R. Mulloy, 1 Onslow St., Rosebay 2029.

2ALX—A. R. Stuart, 10 Wanganella St., Balgownie 2093.

2ANC—T. Clendon, 19 Benwarrin Ave., Baulkham Hills 2153.

2BBG—J. M. Potts, 14 John Street, Woonona 2517.

2BCR—C. Rushby, 11 Excelsior St., Leichhardt 2040.

2BCX—R. A. Bee, 30 Prince St., Glenbrook 2773.

2BDD—J. Rooks, 5/46 Fontainebleau St., Sans Souci 2219.

2BGO—G. W. Henshaw, 386 Heath St., Albury 2840.

2BL—L. Lesea, 14 Copeland St., Richmond 2753.

2BNZ—J. Mouritsen, 37 Fourth Ave., Wolliboughy 2068.

2BRJ—R. James, 34 William St., Hornsby 2077.

2BRN—R. N. Blake, 32 Lynwood Av., Killara 2071.

2YBN—J. B. Scott, 13 Glirring Ave., Vaulcuse 2030.

2YBO—B. P. Fitzpatrick, 20 Figtree Ave., Randwick 2031.

2ZEZ—G. W. Evans, 282 Morrison Rd., Ryde 2112.

2ZJW—A. J. Walker, 99 Labrador St., Roxy Hill 2786.

2ZMK—J. Moodie, 31 Mavis Ave., Peakhurst 2110.

VICTORIA
 VK3FB/T—L. E. Steel, 21 Wade Lane, Golden Square 3550.

3XS—D. B. Mundle, 112 Blackburn Rd., East Doncaster 3109.

3APJ—E. W. Martin, 8 Arthur St., Mt. Beauty 3699.

3BAW—H. D. Hanson, Unit 4, 35 Riversdale Rd., Hawthorn 3181.

3BCE—D. E. Hill, Cnr. Riversdale Ave. & Eleventh St., Mildura 3500.

3BL—W. G. Maddern, 11 Wilson St., Fernfrie 3158.

3BKW—K. R. White, 59 Charles St., Ascot Vale 3032.

3BON—O. N. Eva, 5 Kennedy Rd., Shepparton 3630.

3YBL—W. A. Lyon, 97 Eplington St., Moonee Ponds 3039.

3YCA—D. C. Arnold, 8 Russell St., Camberwell 3124.

3YD—C. J. Jarvis, Beaufort Ave., Ballarat 3350.

3YDO—M. Robinson, 338 Dorset Rd., Boronia 3135.

3YDW—D. P. Sharples, 79 St. Albans Ave., Box Hill 3129.

3YHC—K. A. Ayton, 145 Sunshine Rd., Tottenham 3012.

3YHI—K. I. Woods, 31 Glen Iris Rd., Camberwell 3124.

3YHW—M. A. Sharples, 79 St. Albans Ave., Box Hill 3129.

3YJW—J. L. Wickham, 186 Punt Rd., Prahran 3181.

3ZDA—A. E. Hiecock—1A Parker St., Springvale 3172.

3ZEF—O. D. Baldock, 71 Enfield Ave., Park Orchards 3141.

3ZFC—A. D. Buck, 283 Gooch St., Thornbury 3071.

3ZGA—G. H. Apperley, 22 McCracken Ave., Northcote 3070.

3ZJH—D. W. Horsey, 12 Palmerston St., Bendigo 3350.

3ZJK—A. J. Underhill, 44 Knox St., Reservoir 3073.

3ZJN—T. J. Jones, 5 The Broadway, Nth. Altona 3025.

3ZKN—A. E. Mellows, 20 Deakin Cres., Dandenong 3175.

3ZOD—O. G. Schmidt, 79 Frakenham Rd., Ashburnham 3130.

3ZPG—S. A. Barnham, 97 Esplanade, Altona 3018.

3ZPH—P. A. Hicks, 26 Harrison St., Mitcham 3132.

3ZPT—M. Paget, 11 Johnstone St., Broadmeadows 3047.

3ZQV—M. J. McDonald, 60 Arkaringa Cres., Blackburn 3130.

3ZSR—B. H. Riley, 9/33 Evans St., Wangaratta 3677.

3ZTT—G. L. Sneddon, 20 Vermont St., Glen Waverley 3150.

3ZUD—D. Dickinson, 13 White St., Mt. Waverley 3149.

3ZU—J. G. Jones, 2/25 Collin Rd., 8th. Oakleigh 3167.

3ZYU—D. C. Hunt, 28 High St., Mont Albert 3127.

3ZZI—G. W. Summer, 8 Michael St., Bendigo 3550.

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CROWN AGENTS, 54 CARRINGTON STREET, SYDNEY 2000

QUEENSLAND

VK4WC—G. A. Clapp, 50 Mallaia Rd., Palm Beach 4221.
 4ZJT—J. Langburne, 25 Barcelona St., Kirwan 4814.
 4ZLL—L. E. Ashdown, 62 Monterey St., Wacol 4078.
 4ZVC—P. V. Cunningham, 228 Toombul Rd., Northgate 4013.
 4ZSR—R. W. Ring, 19 Greiville Ave., Southport 4215.

SOUTH AUSTRALIA

VK5ZDG—D. A. Morris, 21 Manilla Rd., Salisbury North 5108.
 5ZGS—G. K. Sillis, 18 Keith Ave., Nth. Plympton 5037.
 5ZSR—S. R. Wade, 19 Deepdene Ave., Mitchell Park 5043.
WESTERN AUSTRALIA
 VK6HA—A. H. van den Avort, 23 Slade St., Bayswater 5053.
 6TZT—D. V. Robinson, 28 Chisfield St., Gosnells 6110.

TASMANIA

VK7SG—S. Giudici, 109 Lansdowne Cres., West Hobart 7000.

NORTHERN TERRITORY

VK8BA—T. A. Bachman, 25 Hablett Cres., Alice Springs 5750.
 8CEG—G. N. Rayner, RAAF Base, Darwin 5700.

CHANGE OF ADDRESS

NEW SOUTH WALES

VK2YBP—D. B. Poulton, 22 Beecroft Rd., Beecroft 2118.

VICTORIA

VK3DH—L. Morgan, Change of Postal Code to 3123.
 3ABT—F. R. Barber, 13 Harrison St., Ringwood 3134.
 3ABV—T. E. Straughall, 18 Capricorn Ave., East Doncaster 3109.
 3AGJ—L. N. Hocking, 8 Nymph St., Mitcham 3132.
 3ABY—W. W. Guy, 4 St. Thomas Ave., Warringa 3152.
 3YHJ—M. J. Ross, 768 Malvern Rd., Armadale 3143.
 3ZHX—H. E. Jones, 22 Screen St., Frankston 3199.
 3ZMV—F. A. Kellock, Unit 10, 7 Kenilworth Pde., Ivanhoe 3079.

QUEENSLAND

VK4DY—M. T. Deakin, Bouldercombe via Mt. Morgan 4714.
 4QY—K. B. Pounsett, 33 Lasseier St., Kedron 4031.

SOUTH AUSTRALIA

VK5LT—J. D. Church, Fl. 6/149 Lipsatt Ter., Brooklyn Park 5032.

WESTERN AUSTRALIA

VK6ZGW—K. J. Chipper, "Yallambee" Hedges Rd., Glen Forrest 6071.
 6ZBG—J. E. Barbara, Station: Flat D, Lot 481 Loch St., Derby 6728; Postal: C/- Derby Regional Hospital, Derby 6728.

CANCELLATIONS

VICTORIA

VK3AAS—Army Apprentices School, Balcombe. Not renewed.

3APL—J. T. Cunningham. Not renewed.
 3AYC—H. P. L. Caudell. Not renewed.
 3BGW—L. Sambell. Not renewed.
 3ZEW—P. Stroud. Not renewed.
 3ZWM—D. E. Hill. Now VK3BCE.
 3ZVX—L. J. Pertz. Not renewed.
 3ZKV/T—L. E. Steel. Now VK3FB/T.

QUEENSLAND

VK4WO—A. H. Tiler. Deceased.
 4ZCH—C. P. L. Hunt R. E. Not renewed.
 4ZGK—G. K. King. Not renewed.
 4ZRN—R. L. Neilson. Not renewed.

SOUTH AUSTRALIA

VK5OW—P. A. Dennison. Not renewed.
WESTERN AUSTRALIA
 VK6GN—G. E. Nixon-Smith. Not renewed.
 6SV—K. E. Pledger. Not renewed.
 6WF—F. Wawzynski. Not renewed.
 6HY—H. K. F. Van. Not renewed.
 6ZAC—J. F. Chambers. Not renewed.
 6ZHA—A. H. van den Avort. Not renewed.
 6ZFR—D. V. Robinson. Not renewed.

PERMISSION TO CONDUCT TV EXPERIMENTS

VK5OT/T—B. J. Blaby, 1 Amanda Way, Morphett Vale 5162, SA.

5ZTT/T—P. M. S. Birrell—Brigadoon Tolmers Rd., Mt. Gambier, SA.
NEW STATATIONS—JANUARY 1974
AUSTRALIAN CAPITAL TERRITORY
 VK1DW—D. H. Watkins, 1 Friendship St., Rad Hill 2603.

1ZKB—K. C. Barnes, 2/27 Gamor St., Waramanga 2611.

NEW SOUTH WALES

VK2RR—A. A. Mattingh—10 Woodland St., Balgownie 2055.
 2AWJ—J. W. Williams, Block 423, Mourquong 2948.
 2AZP—J. W. Faulkner, 10 Lily St., Croydon Park 2133.

2BBD—N. L. Kinch, 11/92 Soldiers Ave., Harbord 2096.

2BKZ—J. W. Daniel, 83 Chisholm Rd., Auburn 2144.

2BPI—Maitland Postal Institute Radio Club, Day St., East Maitland 2323.

2BWZ—W. E. Purser, 3 Thomas St., Balmoral 2041.

2BYW—D. W. Brown, 20 Orange St., Eastwood 2122.

2BYO—A. R. Chapple, 1 Mimosa Rd., Turramurra 2074.

2YBR—D. A. Crofts, 83 Grandview Rd., New Lambton Heights 2305.

2YBS/T—G. C. Snell, 305 High St., Cheshwood 2067.

2YBW—D. R. Pollard, "Knalith" RMB 405 Oura Rd., via Wagga 2650.

2YBT/T—J. O. Wightman, 10/37 Eddystone Rd., Bexley 2207.

2YBZ—D. B. Cotte, 16 Wrona St., North Lambton 2299.

2YCA—G. S. Carter, 121 Victoria Rd., West Pennant Hills 2120.

2YCB—T. I. Clarke, 7/100 Pacific Pde., Dee Why 2099.

2YCL—J. C. Campbell, 4 Tooke St., Newcastle 2300.

2ZAF—T. K. Austin, Univ. Hall 281 Parramatta Rd., Glebe 2037.

VICTORIA

VK3XO—W. H. Kelly, 6 Edwin St., Bendigo 3350.

3AHP—H. P. Haines, 12/53 Grange Rd., Toorak 3142.

3ANO—S. R. Brooks, 6 Edger Ct., Fernree Gully 3150.

3AXI—R. A. Heron, 28 Ivanhoe St., Glen Waverley 3150.

3BGZ—R. C. Sang, 10/45 Caroline St., South Yarra 3141.

3BHY—H. K. Vum, 12/37 Hope St., South Yarra 3141.

3YHT—T. Harkness, 68 Dunblane St., Noble Park 3174.

3YJE—G. C. Wood, 8 Ross St., Ascendale 3185.

3YJH—J. H. Harvey, 4 Hillview St., Bendigo 3350.

3ZFK—F. R. Swinerton, 12 Grimshaw St., Greensborough 3088.

3ZLM—J. J. Smith, 1 Emma St., Sth. Caulfield 3182.

3ZML—P. M. Higgins, 1025 Glenhenty Rd., Sth. Caulfield 3162.

3ZPC—S. L. Load, 38 Kevin Ave., Fernree Gully 3156.

3ZPW—P. Chadwick, 12 Talbot Ave., Baleyton 3103.

3ZQQ—L. Stone, 7 McKinnon Rd., McKinnon 3204.

QUEENSLAND

VK4OI—J. S. Stent, Permanent Mobile.

4PI—W. R. Poole, 277 Charles St., Altonvale 4814.

4PY—J. K. McCarthy, PO Box 169, Surfers Paradise 4217.

4YI—P. A. Pender, 4 Donna Ave., Rochade 4213.

4YJ—R. F. Woolley, 19 Alkewa St., Banyo 4014.

4ZDB—D. F. Adamson, 157 Eyre St., Nth. Ward 4810.

4ZRF—A. Downie, 2 Inge St., Mt. Gravatt 4122.

SOUTH AUSTRALIA

VK6BA—M. R. Haskard, 64 Malvern Ave., Malvern 5081.

6GJT—J. F. Ingham, 74 Fisher St., Fullerton 5063.

6MD—R. Baty, 43 HMAS Australia Rd., Henley Beach 5023.

6VG—W. D. Gaines, Walkoria Airport, Walkoria 5330.

6WQ—W. C. Wilkinson, 13 Donald St., Highbury 5089.

6XX—R. W. Warden, 14 Thomas St., Unley 5061.

6ZG—G. L. Stephens, 69 Sansam Rd., Semaphore 5019.

6ZCH—A. J. Chaliner, PO Box 63, Mt. Gambier 5290.

6ZJD—J. D. Bishop, 10 Fraser St., Lower Mitcham 5062.

6ZLN—L. Chisholm, 12 Talbot Ave., Nth. Plympton 5037.

6ZPD—D. B. Berry, 19 Wilson Rd., Gilles Plains 5086.

6ZWC—W. C. Coates, 4 Malone St., Millicent 5280.

WESTERN AUSTRALIA

VK6AI—G. N. Marks, 62 The Grange, Tranby Park, W. St. 6001.

6XD—D. L. Hall, 73 Cleveland St., Dianella 6062.

6CI—W. R. Cook, 30 River Dr., Pinjarra 6208.

6GN—G. E. Nixon, 69 Haig Rd., Attadale 6156.

6ZCL—G. Meers, 8 Coastes Street, Hamilton Hill 6153.

6ZJP—P. W. Jepp, 49 Kooyong Rd., Rivervale 6103.

TASMANIA

VK7UV—R. B. Greenwood (Name changed from R. B. Trollope), 25 Prospect St., Launceston 7250.

7ZDX—D. M. J. Bates (transferred from SA), 19 Browns Rd., Kingston 7150.

7ZYT—G. S. Taylor (transferred from Vic.), 4/7 Una St., Mt. Stuart 7000.

NORTHERN TERRITORY

VK7HM—C. E. Anderson, 60 Bloomfield St., Alice Springs 5750.

CHANGE OF ADDRESS

NEW SOUTH WALES

VK2ZOA—W. P. Harmon, 19/80 Cambridge St., Stanmore 2048.

VICTORIA

VK3JFF—P. J. Fitzherbert, 115 Barrabool Rd., Highton 3216.

3GE—J. R. Wade, 23 Lawson Ave., Frankston 3198.

3QJ—V. N. Tulhili, 78 Maroney St., Balmadale 3909.

3TR—L. C. Sawyer, 6 Hainthorpe Gr., Mulgrave 3170.

3TV—A. C. Styles, Pascoe St., Avoca 3467; Postal Address: PO Box 86, Avoca.

3XQ—V. H. Richardson, 79 Devon Rd., Pascoe Vale 3044.

3AFX—R. Hocking, 27 Foote St., Elwood 3184.

3AOD—F. C. N. Glenville, 23 Falcon Rd., Macleod 3085.

3AQV—J. N. Glenville, 23 Falcon Rd., Macleod 3085.

3ASN—R. J. Assender, 31 Celeste St., Doncaster 3109.

3AVK—N. C. Duncan, 15 Sherbrooke Ave., Ringwood 3134.

3BBI—B. Lukes, 3 Muir St., Mt. Waverley 3149.

3BGK—S. L. Spayde, 49 Kooringal Rd., Upwey 3158.

3YAD—A. W. Biddle, Lot 7, 7 Tarhilla Dr., Launching Place 3139.

3YBP—T. Robinson, 16 Parring Rd., Balwyn 3104.

3YCK—J. M. Wiseman, 40 Gardena St., Horeham 3400.

3ZFJ—A. M. Tilley, 521 Glenferrie Rd., Hawthorn 3122.

3ZIL—P. A. Elton, 26 Abercrombie St., Deepdene 3103.

3ZIO—D. A. Fresser, 4 Stablesford Ave., Glen Waverley 3150.

3ZOO—O. G. Schmidt, 32 Brentwood Dr., Glen Waverley 3150.

3ZKY—T. J. Laith, 2/25 Gardenway Gr., East Prahran 3181.

QUEENSLAND

VK4IN—J. R. Horrocks, 16 Grevillea Dr., Burielgh Heads 4220.

4LL—L. F. Coyle, 180 Shearman Ave., North Rockhampton 4701.

4LT—J. E. Carter, 113 Pacific Ave., Sunshine Beach 4567.

4WR—W. M. Ryan, 8 Olive Ct., Hambour 4580.

4ZKP—K. R. Pollock, 24 St. Vincents Rd., Virginia 4014.

SOUTH AUSTRALIA

- VK5BU/T—F. Bourne, The Rectory, 14 Memorial Dr., Keith 5267.
 50L—R. Dexter, 37 Adelaide Ter., St. Marys 5042.
 5GZ—E. B. Gliddon, 19 Arnold St., Underdale 5032.
 3YHN—E. S. Day, 21 Drummond St., Swan Hill 3585.
 3YLC—B. D. Littlejohn, 19 Armstrong St., Laverton 3028.
 3ZMX—J. A. Mackenzie, 10/306 Dandenong Rd., East St. Kilda 3182.
 3ZUB—M. A. Cole, Lot 31, Dandenong Hastings Rd., Cranbourne 3177.
 3ZXY—R. J. Pertzle, 16 Simmonds St., Oakleigh 3166.

QUEENSLAND

- VK4ZBK—I. R. Barnett, 241A Mackenzie St., Tooowoomba 4350.
 4ZHE—J. W. Heares, 58 Elizabeth St., Gladstone 4680.
 4FM—R. J. Davey, The Chalet Mapleton 4550.
 4MC—R. W. Atwood, 27 Brampton Ave., Cranbrook Townsville 4813.
 4MM—A. A. Millard, 178 Main St., Park Ave., Rockhampton 4700.
 4WIA—Wireless Institute of Australia, Postal Box 635 GPO Brisbane 4001; Station: 24 Alisa St., Aspley 4030.

SOUTH AUSTRALIA

- VK5ID—A. B. Cleave, Smith Street, Port Vincent 5581.
 5VE—L. M. Leslie, Supt. Reg/Lic, 30 Flinders, Adelaide 5000.
 5ZGN—C. L. Park, 127 Robertson Rd., Moana 5169.

WESTERN AUSTRALIA

- VK5CI—W. R. Cook, 30 River Drive, Pinjarra 6208.
 6GN—G. E. Nixon, 69 Haig Rd., Attadale 6156.
 6JE—J. E. Charoux, 182 Wellcott St., Mt. Lawley 6050.
 6LB—L. S. Blackman, 6AM Transmitter, Northam 6400.
 6OJ—D. Jones, Station: Lot 86, Walpa Way, Duncraig; Postal: Flat 1, 241 Cambridge St., Wembley 6014.
 6DK—R. Kilworth, 68 Robinson Rd., Morley 6062.
 6AU—A. C. Graham, 2 Kathleen St., Lesmurdie 6078.
 6VL—E. H. Connery, Lot 2, Holden Rd., Rolestone 6111.
 6SV—K. E. Pledger, c/- TV Station, Koolan Island 6733.
 6ZJP—P. W. Jupp, 49 Kooyong Rd., Rivervale 6103.
 6ZAA—W. J. Howse, 11 Parkside Ave., Mt. Pleasant 6153.
 6ZGA—R. M. Aysenberg, 19 Forrest Ave., Newman 6753.

TASMANIA

- VK7TM/T—W. T. Moffat (was VK7TM), 7 Shannuk Dr., West Hobart 7000.
 7WD—J. Whent, 12 Blackwood St., Grassy, King Island 7258.

NORTHERN TERRITORY

- VK8RZ—R. J. Verral, Umbakuma, Groote Eylandt.
 8PO—B. S. Miller, 80 Memorial Ave., Alice Springs.

CHANGE OF ADDRESS

VICTORIA

- VK3CJ—C. J. Manning, Cabbage Tree Road, Marlo 3889; Postal: PO Marlo 3888.
 3FO—C. K. Gibson, Lot 28E, Church St., Maldon 3463; Postal: PO Main St., Maldon.
 3HA—R. F. Meaney, Pack Rd., Sydenham 3638.
 3KB—E. G. Mackay, 390 Glenferrie Rd., Malvern 3144.
 3LW—A. B. Bradley, 9 Langdon St., Portarlington 3223.
 3OE—E. N. Planck, 62 Eversham Rd., Cheltenham 3152.
 3TX—Dr. D. R. Blackman, 129 Clayton Rd., Clayton North 3168.
 3VE—L. D. Hayward, 192 High St., Wodonga 3690.
 3AUR/T—R. Wilkins, "Wood View", Byaduk 3285.
 3BCJ—R. C. C. Jackson, 84 Glenroy Rd., Glenroy 3046.
 3YFB—D. R. Atkinson, 32 Lording Rd., Fernree Gully 3155.
 3ZAZ—S. R. Gregory, 36 Pleasant St., South Ballarat 3350.

- 3ZDT—O. F. Taylor, 50 Auburn Rd., Auburn 3122.
 3ZHU—A. G. Moritz, 4 Dugdale St., Bacchus Marsh 3345.
 3ZKL—L. Slamin, Lot 25, Timberglades Rd., Montrose 3765.
 3ZLQ—R. F. Hall, 71 Somers Ave., McLeod 3065.
 3ZRG—R. J. Roche, 1/2 Thomas St., Kew 3101.
 3ZTV—A. G. Lyall, 102 Seaford Rd., Seaford 3199.

QUEENSLAND

- VK4ZEM—P. Mead, 71 Coverdale St., Indooroopilly 4058.
 4BG—R. J. Glassop, 18 Mentone Ave., Southport 4220.
 4DJ—D. J. McGroy, 17 Anderson St., Cairns 4870.
 4LM—L. E. H. Mallinson, 53 Waterson St., Annerley 4103.

SOUTH AUSTRALIA

- VK5DJ—J. F. Drew, 19 Dunlop Ter., Jamestown 5491.
 5FV—V. Clemence, 267 Salisbury H'way, Paradise Gardens 5107.
 5KG/T—J. F. Ingham, 37 Second Ave., Seifton Park 5083.
 5OJT—L. Veale, 9 Hallett Rd., Erindale 5068.
 5BU—J. W. K. Adams, 34 Lambell St., Ceduna 5690.

- 5ZBW—L. R. Burton, 25 Myall St., Renmark 5341.
 5ZPC—P. Clemence, 267 Salisbury H'way, Paradise Gardens 5107.

WESTERN AUSTRALIA

- VK6OW—O. J. Willoughby, 48 Pollack Ave., Balga 6081.
 6FN—M. L. Faulkner, Station: 66 Mount St., Manjimup 6258; Postal: PO Box 309, Manjimup 6258.
 6DR—J. G. Harmsen, 40 Russell St., Morley 6062.
 6CZ—C. F. Lloyd, 88 Callisan Way, Koondoola 6084.
 6KY/T—G. D. Ogg, 11 Apara Way, Nollamara 6081.
 6CV—R. W. Walker, Lot 75, Camira Pl., Gooseberry Hill 6076.
 6LR/T—L. G. Rock, 40 Fairbridge Rd., Mandurah 6210 (now both station and Postal same).
 6KS/T—T. Scorer, 14 Bateman Rd., Mt. Pleasant 6153.
 6FT—F. T. Tuffin, Lot 44, Georgeote Dr., Marangaroo 6265.
 6ZDF—T. W. Robinson, 48 Allenswood Rd., Greenwood 6204.

TASMANIA

- VK7ZDF—R. H. Ferris, 15 Fisher Ave., Sandy Bay 7005.

NORTHERN TERRITORY

- VK6FD—F. D. Saarda, Station: "Yuendumu" via Alice Springs; Postal: PO Box 748, Alice Springs 7500.

CANCELLATIONS

VICTORIA

- VK3KM—K. W. Magee, Not renewed.
 3VT—J. V. Hudson, Not renewed.
 3WJ—Dr. F. S. Kantor, Not renewed.
 3AU—C. J. Schultz, Not renewed.
 3APF—J. H. Power, Not renewed.
 3ANN—K. A. Vascoe, Not renewed.
 3AYT—T. A. Rowan, Now VK3VY.
 3BAO—D. A. Moffat, Now VK3FJ.
 3BCD—E. G. Egan, Now VK3XT.
 3YBM—R. J. Martindale, Now VK3BMB.
 3ZDR—R. H. Chapman, Not renewed.
 3ZJO—E. G. Briggs, Not renewed.
 3ZYD—C. G. Parnell, Not renewed.

QUEENSLAND

- VK4ZAM—A. S. Millard, Changed to unrestricted.
 4ZOW—D. W. Rickard.
 4ZFL—R. Lyman, Own request.
 4BA—A. R. Bradley, Non-payment of renewal fees.
 4KJT—L. Cordell, Transferred to Sydney.
 4WI—Wireless Institute of Australia. See Section 1 above.

SOUTH AUSTRALIA

- VK5UM—A. E. Taylor, Transferred to Victoria.
 5ZA—R. G. Jolly, Transferred to Victoria.

WESTERN AUSTRALIA

- VK6RJ—R. A. Burgess, Requested.
 6FQ—R. L. Davies, Transferred to NSW.
 6ZGO—A. C. Graham, Now unrestricted — see above.
 6ZGJ—W. Coorte, Non-payment of renewal fees.
 6ZCV—Gaideleucis, Non-payment of renewal fees.

TASMANIA

- VK7DZ/T—J. L. Kelly Hart, 836 Sandy Bay Rd., Sandy Bay 7005 (transferred to Queensland).
 5SB—L. S. Brown, 170 Jubilee H'way, Mt. Gambier 5290.
 5TH—T. R. Hutchesson, 53 Swallow Dr., Mt. Gambier 5290.
 5YB—B. A. White, 81 Torrens Rd., Riverton 5142.
 5ZEF/T—R. J. Foxwell, 39 Werona Ave., Parkholme 5043.
 5ZIR—R. W. Edwards, 21 Birks St., Parkside 5053.
 5ZTS—T. Scholten, 175 Lacey St., Whyalla 5600.
 WESTERN AUSTRALIA
 VK5MG—L. P. McGuire, 34 Ripplewood Ave., Thornlie 6108.
 6MO—A. Parkas, 25 Gloster St., Subiaco 6008.
 6BD—B. F. J. Davis, 13 Cara Rd., Greenmount 6050.
 6IR—J. R. van Laar—Postal: c/- M. A. Nickolas & Ass., PO Box 112, South Perth 6151; Station: Portable.
 6RTT—Carnarvon Amateur Radio Club, Postal: 6TS) c/- Harmlinton PO Box 708, Carnarvon 6701; Station: Unchanged.
 6RN—M. Rosenthal, Postal: c/- H. T. Mulder, 2 Bedwell St., Emu Point 6332.
 6OW—J. J. Wubbly, 48 View Ter., East Fremantle 6153.
 6ZGM—E. B. McAndrew, Station: Flat 5, 296 Scarborough Beach Rd., Doubleview 6018; Postal: PO Box 115, Doubleview 6018.
 6ZLR—R. F. Lester, 27 Young St., Carnarvon 6701.
 6ZHR/T—R. K. Henderson, 24 Forrest St., Quairading 6335.

TASMANIA

- VK7JP—L. J. Darlin, 6 Cressy St., New Town 7008.

CANCELLATIONS

VICTORIA

- VK3HL—A. T. Hutchings, Not renewed.
 3AJK—W. H. Kelly, Now VK3XO.
 3ODS—K. Butcliffe, Transferred to NSW.
 3YCH—G. G. Loxton, Not renewed.
 3ZYT—G. S. Taylor, Transferred to Tasmania.
 3YCS—R. R. Brooks, Now VK3ANO.
 3YGZ—I. J. Dalwood, Not renewed.
 3ZGV—J. Sutcliffe, Transferred to NSW.

QUEENSLAND

- VK4BM—W. J. Mead, 8 Cross St., Mitchelton 4053.
 4ZFL—R. Lyman, 48 Reuben St., Stafford 4053.
 4ZJF—J. Field, 16 Adsett St., Taringa 4068.

SOUTH AUSTRALIA

- VK5MZ—F. E. Bentley, Deceased.
 5ZBH—M. R. Haskard, Now VK5BA.
 5ZDA—D. M. J. Bates, Transferred to Tasmania.
 5ZHT—H. G. Tremethick, Not renewed.

WESTERN AUSTRALIA

- VK6GX—G. N. Marks, Now VK6AI. Note change of address, see New Stations.
 6PS—Perth Modern School Radio Club. No longer active.
 6MC—R. W. Atwood, Transferred to Queensland.

TASMANIA

- VK7BB—A. E. Byrne, Exton 7257 (non payment of renewal fee).
 7RZ—R. J. Verral, 105 Arthur St., West Hobart 7000. (Transferred to Northern Territory).
 7UV—R. B. Trollope, 74 Maranda Rd., Kingston 7150. (Name changed to R. B. Greenwood — see New Stations).

NORTHERN TERRITORY

- VK8ZB—G. L. Stephens, Transferred to SA.

NEW STATIONS

SOUTH WALES

- VK2BHT—H. R. Tyrman, 9/60 Charlotte St., Ashfield 2131.
 2ZNZ—R. J. Milton, 1C/40A Roslyn Gardens, Elizabeth Bay 2011.

VICTORIA

- VK3FJ—D. A. Moffat, 13 Nottingham St., Sydnal 3150.
 3VT—T. Rowan, 2/2 Georges Rd., Toorak 3142.
 3XT—E. G. Egan, 15 Clunies Cres., Mulgrave 3170.
 3AOW—M. S. Hodgson, "Pine Ridge" Sheffield Rd., Glenore South 3765.
 3ATZ—E. E. Glew, 50 Bernard St., Cheltenham 3192.
 3BMA—R. J. Martindale, 6 Hora Ct., Glen Waverley 3150.

(To be continued)

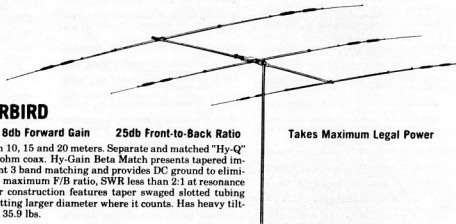
Hy-Gain NEW SUPER THUNDERBIRD TRIBANDER BEAMS from BAIL ELECTRONICS

NEW, IMPROVED SUPER 3-Element THUNDERBIRD

- New "Hy-Q" Traps Up to 8db Forward Gain 25db Front-to-Back Ratio

Takes Maximum Legal Power

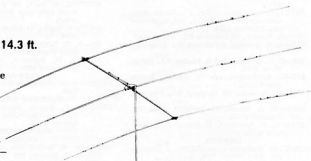
Delivers outstanding performance on 10, 15 and 20 meters. Separate and matched "Hy-Q" Traps for each band. Feeds with 52 ohm coax. Hy-Gain Beta Match presents tapered impedance which provides most efficient 3 band matching and provides DC ground to eliminate precipitation static resulting in maximum F/B ratio, SWR less than 2:1 at resonance on all bands. Mechanically superior construction features taper swaged slotted tubing allowing easy adjustment and permitting larger diameter where it counts. Has heavy tilt-able boom to mast clamp. Shpg. Wt. 35.9 lbs.



FABULOUS THUNDERBIRD JUNIOR

- Up to 8db Forward Gain 25db Front-to-Back Ratio
- Takes up to 300 Watts AM; 600 Watts P.E.P.
- Rotates with Heavy Duty TV Rotator Turning Radius 14.3 ft.

If you're looking for top performance on 10, 15 and 20 meters but are hampered with severe space limitations, you'll want the Model TH3JR. Constructed of durable, lightweight taper-swaged aluminum tubing, the Model TH3JR is ideal for rooftop or lightweight tower installations. Separate and matched "Hy-Q" traps for each band. Feeds with 52 ohm coax - Beta Matched for optimum gain, maximum F/B ratio without compromise. SWR less than 2:1 at resonance on all bands. Molded high impact cycolac insulators - all hardware iridite treated to MIL specs. Shpg. Wt. 20.4 lbs.



SPECIFICATIONS

ELECTRICAL

Gain
Front-to-Back Ratio
Maximum Power Input

Model TH3Mk3

8db
25db
1 KW, AM
Less than 2:1
52 ohms

Model TH3JR

8db
25db
300 Watts AM;
600 Watts PEP
Less than 2:1
52 ohms

MECHANICAL

Longest Element
Boom Length
Turning Radius
Wind Load At 80 MPH
Maximum Wind Survival
Net Weight
Mast Diameter
Surface Area

27 ft.
14 ft.
15.7 ft.
103.7 lbs.
100 MPH
36 lbs.
1 1/4" to 2 1/2"
4.03 sq. ft.

24.2 ft.
12 ft.
14.3 ft.
87.0 lbs.
80 MPH
21 lbs.
1 1/4 to 1 1/2"
3.4 sq. ft.

TRIBANDER BALUN



60 Shannon St., Box Hill North, Vic., 3129. Ph. 89-2213

BAIL ELECTRONIC SERVICES

Q.L.D.: MITCHELL RADIO CO., 59 Albion Road, Albion, 4010
N.S.W.: STEPHEN KUHLE, P.O. Box 56, Mascot, 2020

Ph.: 57 6830
Ph.: Day 667 1650

S.A.: FARMERS RADIO PTY. LTD., 257 Angus Street, Adelaide, 5000.
W.A.: H. R. PRIDE, 26 Lockhart Street, Como, 6152.

Ph.: 23 1256
Ph.: 60 4379